This Week in STEEL The Metalworking Weekly

May 11, 1959
Vol. 144 No. 19

The Case of the Vanishing Taxes!

Acton Chance, STEEL's own private eye, gave such a good report on "The Case of the Vanishing Jobs" (Apr. 6, p. 99) that he was retained for this case also. You'll be amazed at what he has turned up.

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

Rx FOR TIRED MACHINES

PATIENT: Style 215 Precision Boring Machine—built in 1939.

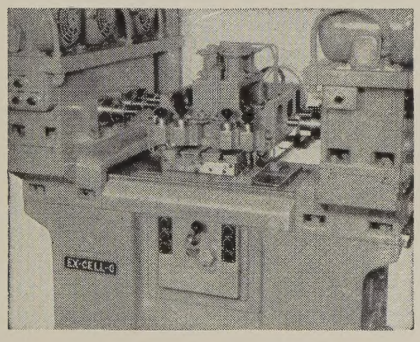
SYMPTOM: Speeds too slow for modern production, tooling outdated.

DIAGNOSIS: Continuous duty from 16 years of heavy work.

CURE: Ex-Cell-O Machine Renewal and Repair Service.

RECOVERY: Fast, complete, guaranteed.

FUTURE: Longer life, "like new" performance.

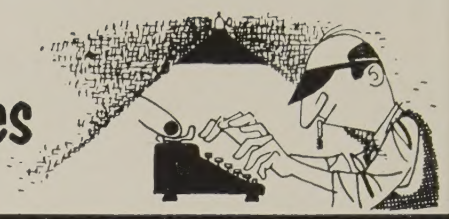


This 16-year-old Precision Boring Machine, recently rebuilt and retooled by Ex-Cell-O, is back on the job, giving profitable, "like new" service. Renewal or modernization of standard or special machines by Ex-Cell-O experts restores original precision and greatly extends the value of your investment. The service is quick, the workmanship thorough, and your complete satisfaction is guaranteed. Call your local Ex-Cell-O Representative, or write direct for full details.

XLO EX-CELL-O FOR PRECISION
58-52

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

behind the scenes



Private Eye Has New Case

Every full-blooded American metalworking management man who was raised on Mutt & Jeff knows that characters seldom spring into being at one bound. Sometimes they come on stage carrying a spear and wind up by taking the lead. Comic strip aficionados know that Mutt & Jeff were two bums who became national characters; that Dinty Moore, though seldom depicted, carried more weight than the strip's hero, Jiggs; that Popeye, who appeared originally as background decoration, took over top billing.

The new figure who appeared in STEEL (The Case of the Vanishing Jobs, Apr. 6, p. 99) seems to be establishing a place for himself. Private Eye Acton Chance, brainchild of Associate Managing Editor John Morgan, is up to his tricks again this week, beginning on Page 100. He is on the trail of The Vanished Taxes, and you don't have to be a mystery fan to carefully attend this story—you simply have to be a taxpayer. Confidentially, do you know anybody who isn't?

Briefly, friends, here's the pitch. Acton learns that Company X lost its bid to a Japanese firm on a government order for ship plates. Company X learned that it was underbid by about $37,000, and when the government began to crow about its savings, Company X called in Private Eye Chance. This boy poured himself a hoot of bourbon into a Dixie cup, called Clementine to tell her that he would be unable to catch her act at the Lucky Eleven night club, and was off like a shot—or, rather, with the shot.

He found out some amazing information. While the government saved $37,000 on the contract, it lost more than that in the taxes it would have collected from Company X and its employees in the event that Company X had filled the order. Acton traces lost taxes all the way down the line, but we're not going to pirate his report. You may read it for yourself, starting on Page 100 when he picks up his phone.

Drums Along the Ohio

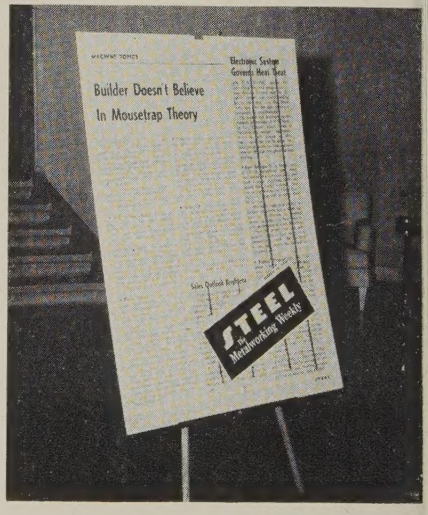
An old astrologer we know recently promised to read our horoscope if we bought him a drink. This kid was on intimate terms with Venus, and the moon, and alcohol; beyond that, he confessed that he had grown a third set of teeth, so it will be noted for the record that he was a man of some consequence.

After he had poured a moderate amount of that which stingeth like an adder down his patient esophagus, he said: "Friend, Jupiter is in a state of indecision, possibly because today marks the feast of Set. You are about to receive a communication from the Orient, maybe from Syria. Do as the man says."

Sure enough, next day we received a letter from the drummer in the Syrian Temple Shrine Oriental Band of Cincinnati. The drummer is Shafer O. Dieckmann, vice president, F. H. Lawson Co., an organization that has been producing sheet metal products in Cincinnati since 1816. That's a right smart piece back: Why, the War of 1812 had recently ended, and President Madison was winding up his second term among the ashes of Washington. It's safe to assume that there were few sheet metal shops in Ohio at that time—and even fewer Oriental bands.

Mr. Dieckmann wanted to use the drum poem (STEEL, Mar. 23, p. 6) in his Temple publication. We told him that STEEL would be quite pleased to be mentioned in the Syrian Temple Shrine publication. Why, when a genuine drummer picks up the beat from a business publication, it's cause for all hands to snap to attention.

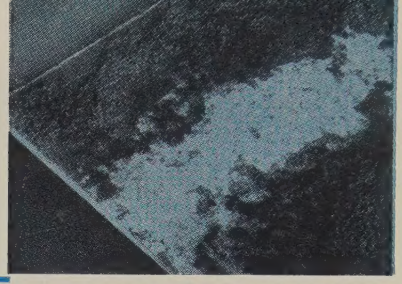
Column Fills Lobby



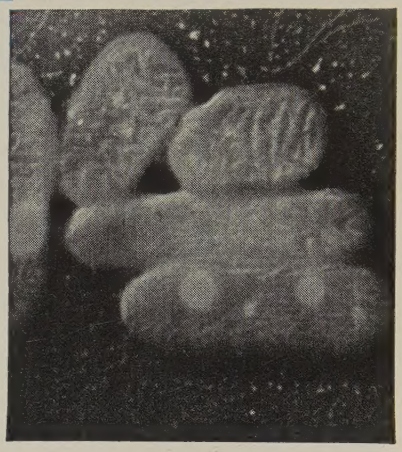
Machine Tool Editor Robert Huber was pleasantly astonished a few weeks ago in Milwaukee. He walked into the lobby of Kearney & Trecker Corp. and ran into a 6 ft blowup of one of his own stories. K&T officials were so pleased with his column in the Mar. 16 STEEL (Builder Doesn't Believe in Mousetrap Theory, p. 130) they blew it up into a giant photostat, set it on an easel, and planted it in their lobby. "Seeing your stuff on a billboard makes you think twice," said Robert. "Imagine what would happen if you had made a little mistake!"

Shrdlu

(Metalworking Outlook—Page 91)



Each year, thousands of gallons of worn-out emulsions go down the drain



With them go millions of dollars that could be saved by controlling bacteria like these Pseudomonads

Now, ELCIDE 75 controls bacteria . . . prevents needless emulsion waste!

BACTERIA SHORTEN EMULSION LIFE. Bacteria enter soluble oil emulsions through the air, water, and normal plant debris. Feeding on the oil-water mixture, they multiply until they cause odor, corrosion, and emulsion breakdown.

WHEN EMULSIONS GO SOUR, COSTS GO UP. The machine has to be shut down, losing production and valuable time. Costly labor is required for the clean-out, recharging, and disposal of the waste emulsion. Additional soluble oil is needed, adding to the total cost of frequent recharging.

BACTERIAL PLATE COUNTS PROVE ELCIDE 75 INCREASES EMULSION LIFE. The light areas below are bacterial colonies that ruin soluble oil emulsions. The left plate shows the untreated emulsion. The center plate is the same emulsion treated with a popular germicide. The right plate proves Elcide 75's double control keeps emulsions clean and usable... *as much as 5½ times longer by actual plant tests.*

Untreated emulsion | **Emulsion treated with common germicide** | **Elcide 75—treated emulsion**

ELCIDE 75 IS A POWERFUL COMBINATION of Sodium *o*-phenylphenate and Sodium Ethylmercuri Thiosalicylate (Thimerosal) . . . related to one of the safest, most effective bacterial inhibitors used in the exacting field of medical surgery. Its double action controls a much wider range of bacterial growth than the commonly used germicides and "additives"; yet Elcide 75 is completely safe to employees and machinery.

JUST ONE OUNCE OF ELCIDE 75 ADDED TO EACH FOUR GALLONS OF STANDARD DUTY SOLUBLE OIL EMULSION . . .

1. **Lengthens emulsion life.**
2. **Reduces soluble oil requirements.**
3. **Reduces downtime for recharging.**
4. **Decreases disposal of waste-oil.**
5. **Preserves emulsions during extended shut-downs.**
6. **Lessens bacterial health hazards.**
7. **Reduces bacterial corrosion of machinery and products.**

If your company is not one of the many plants now using Elcide 75, we suggest you try it soon. Your own cost analysis should convince you of its value.

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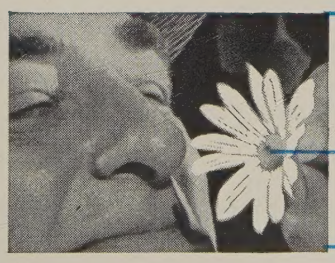
(Lilly's brand of bacterial inhibitor for cutting fluids.)

Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium *o*-phenylphenate.

Package	Price per Gal.
1-gallon (4 per case) polyethylene	$8.50
5-gallon polyethylene	$8.00
55-gallon stainless steel	$6.50

Sold only through selected distributors.



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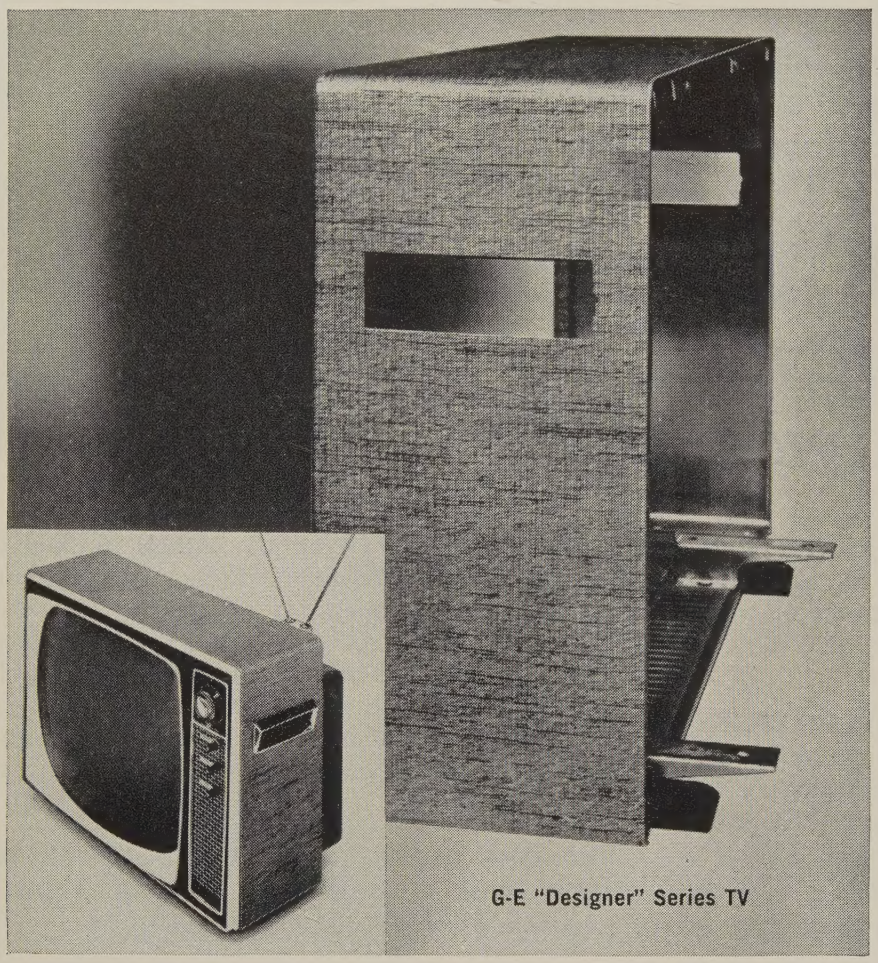

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G-E high-styles TV cabinet with embossed, silk-sheen Colovin, eliminates bare look of metal finishes

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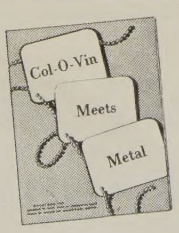

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LETTERS
TO THE EDITORS

Applauds Keeping Wages in Line

We wish to congratulate you on your fine article, "Keeping Wages in Line" (Apr. 13, p. 95). It was most interesting and informative, and I am sure it will be of use to our company.

Will you please send us 12 reprints?

Marion G. Reisner
Adams Co.
Dubuque, Iowa

• • •

I find this article most interesting. We would appreciate two dozen copies.

I. W. Strong
Executive Vice President
Appleton Electric Co.
Chicago

• • •

May I have a reprint of this excellent article?

Roy Mynsberge
Administrative Assistant
Design & Drafting
Bendix Products Div.-Missiles
Bendix Aviation Corp.
Mishawaka, Ind.

A Dissenting Opinion

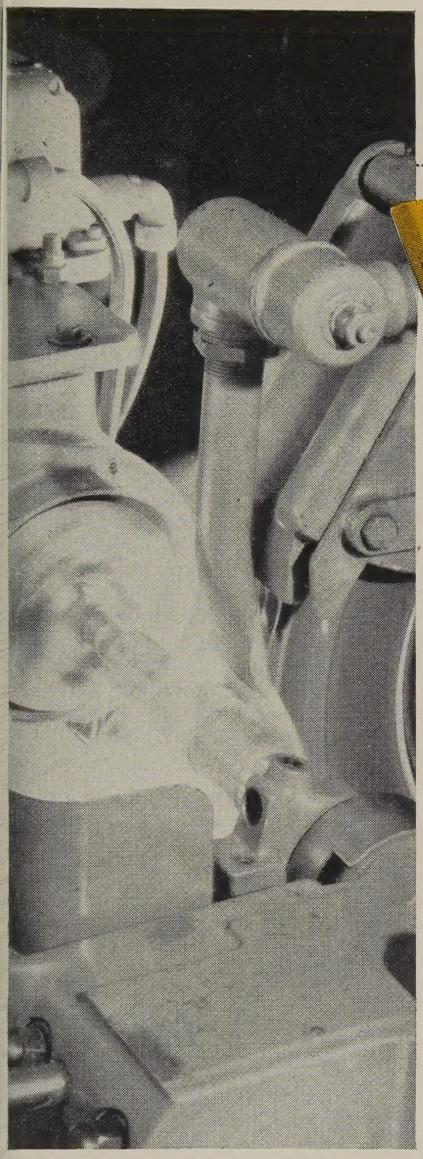
"The Case of the Vanishing Jobs" (Apr. 6, p. 99) is completely biased and unworthy of your usual objective reporting. It appears to have been borrowed from some union's files or from a political lobbyist.

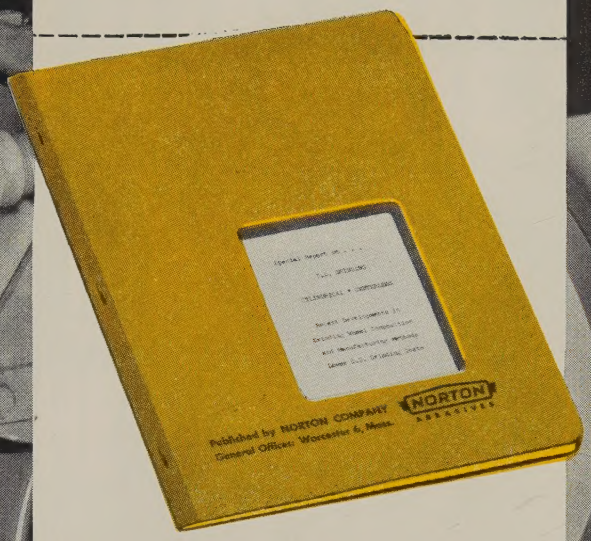
The article makes a pretense of being statistical, yet the easy way in which the writer doubles the values of imports in the case of machine tools would make a statistician's hair stand on end.

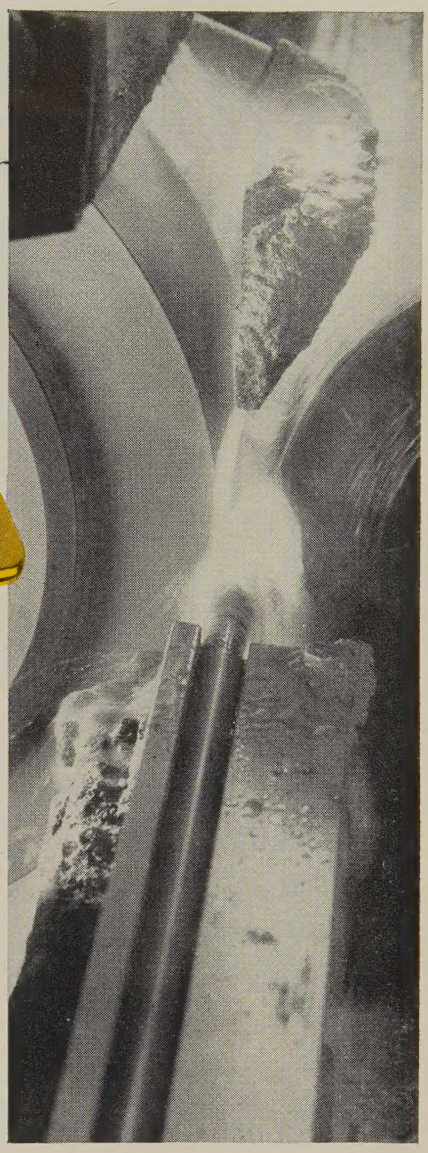
Completely overlooked is the fact that in many cases, imports offer the American people something not available on the American market. Your own pages have attested to this fact with regard to cars. It is not that imported cars are cheaper in all classes—in many cases they are more expensive. Finally, the U. S. manufacturers are waking up to the needs of the motorists.

Another point overlooked is that, after

(Please turn to Page 12)







Get *this* New, Up-To-The-Minute Report *filled with*

Inside Facts on Outside Grinding

A Report on O.D. Grinding, by Norton specialists, describes "tricks of the trade" that get the most out of cylindrical and centerless grinders . . . provides on-the-job performance of different grinding wheels . . . and analyzes the following highly efficient abrasives and bonds.

Abrasives. 44 ALUNDUM* (aluminum oxide) abrasive, an ideal cost-cutter for many O.D. jobs. 32 ALUNDUM abrasive, first choice for grinding various materials, including harder steels. The other time-tested Norton ALUNDUM abrasives are also included. And 37 and 39 CRYSTOLON* (silicon carbide) abrasives are best suited for grinding cast iron, nonferrous metals, carbides and other materials.

Bonds. G bond, biggest advancement in vitrified bonds, gives best results in most O.D. jobs, particularly crush-truing. Vitrified BE bond is another widely used favorite. Where CRYSTOLON abrasive is required, K bond is outstanding. B11 resinoid bond excels in uniformity with both ALUNDUM and CRYSTOLON wheels. For centerless feed wheels, R51 rubber bond assures complete regulating control without slippage.

Your Norton Man will be glad to work with you in solving O.D. problems, to assure you the lowest cost-per-piece produced. How this expert can bring you the value-adding, profit-boosting "Touch of Gold" is stated in the Report, available from your local Norton Representative — and as near as your phone. NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

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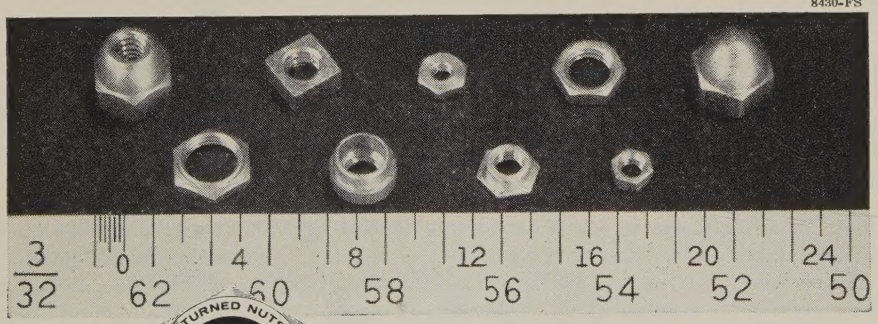

This enlarged scale photograph illustrates typical miniature nuts being supplied for electrical and electronic products.

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For details and specifications on Fischer brass and aluminum nuts, write for CATALOG FS-1000 and prices.

LETTERS

(Concluded from Page 10)

the war, the tremendous exports from this country were largely subsidized by U. S. foreign aid and were paid for by the taxpayers. This condition could not continue forever. In many cases, a condition of foreign aid was that the money be spent in the U. S. A. Naturally, our exports are diminishing now.

Under normal conditions, if foreign countries import from us, they must also export to us to obtain U. S. dollars. If we reduce our imports, it is inevitable that our exports will fall also. We cannot expect to be cheapest in every field. As long as we export more than we import, it proves we are cheaper or superior in a sufficient number of lines.

Every exporting country is faced with this same hard fact. In addition, as more and more underdeveloped countries become industrialized, the whole nature of world trade must shift.

W. L. Govan
Loewy-Hydropress Div.
Baldwin-Lima-Hamilton Corp.
New York

• *This article was not borrowed from some union's files. Most industrial unions take the opposite position. We are not against imports. We are opposed to high tariffs. We believe Americans should be cognizant that competition is mounting from abroad. One reason for this is that the U. S.-foreign wage gap is so wide.*

Seeks Rental Information

In Metalworking Outlook (Apr. 6, p. 93) we note with interest the announcement that GE rents industrial equipment. We would appreciate further details about this service.

K. G. Roth
Mack Trucks Inc.
Allentown, Pa.

• *We suggest you write to General Electric Co., Schenectady, N. Y., requesting Bulletin No. GEA-6829.*

Wants to Pass on Information

I've just read "What's Coming in Welding" (Mar. 30, p. 74) and found it interesting and informative. May I have an additional copy to pass this information on to those who are interested?

Lloyd R. Larsen
Weld Dept.
Dravo Corp.
Neville Island, Pa.

Invaluable

We find your "Metal Selector" (Oct. 20, 1958, p. 165) invaluable for use in our analytical laboratory. May we have three copies of the current issue?

J. E. Van Dien
Director
Applied Spectrochemical Laboratories
Glen Rock, N. J.

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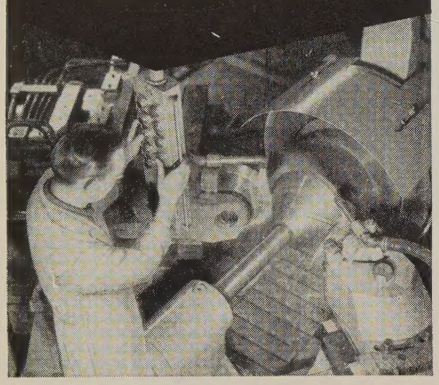

If the shape of your part is tubular, conical, hemispherical, or curvilinear, hydrospinning by the Ingersoll Kalamazoo Division may save you costly machining expense and time. If you want a seamless part, try hydrospinning. If you want precise wall thickness, turn to hydrospinning. Hydrospinning saves on metal, time and labor.

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CALENDAR
OF MEETINGS

May 11-13, American Management Association: Special labor relations conference, LaSalle Hotel, Chicago. Association's address: 1515 Broadway, New York 36, N. Y.

May 11-13, American Society of Mechanical Engineers: Joint conference with American Institute of Electrical Engineers and Institute of Radio Engineers on automatic techniques, Pick-Congress Hotel, Chicago. Information: ASME, 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

May 11-14, American Mining Congress: Coal Show, Public Auditorium, Cleveland. Congress' address: Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

May 12-14, American Society of Mechanical Engineers: National production engineering conference, Statler-Hilton Hotel, Detroit. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

May 13-14, Porcelain Enamel Institute: Midyear conference, Edgewater Beach Hotel, Chicago. Institute's address: 1145 19th St. N.W., Washington, D. C. Managing director: John C. Oliver.

May 13-15, American Supply & Machinery Manufacturers Association: Triple industrial supply convention. Statler-Hilton Hotel, Dallas. Information: Thomas Associates, Keith Bldg., Cleveland 15, Ohio. Business manager: W. B. Thomas.

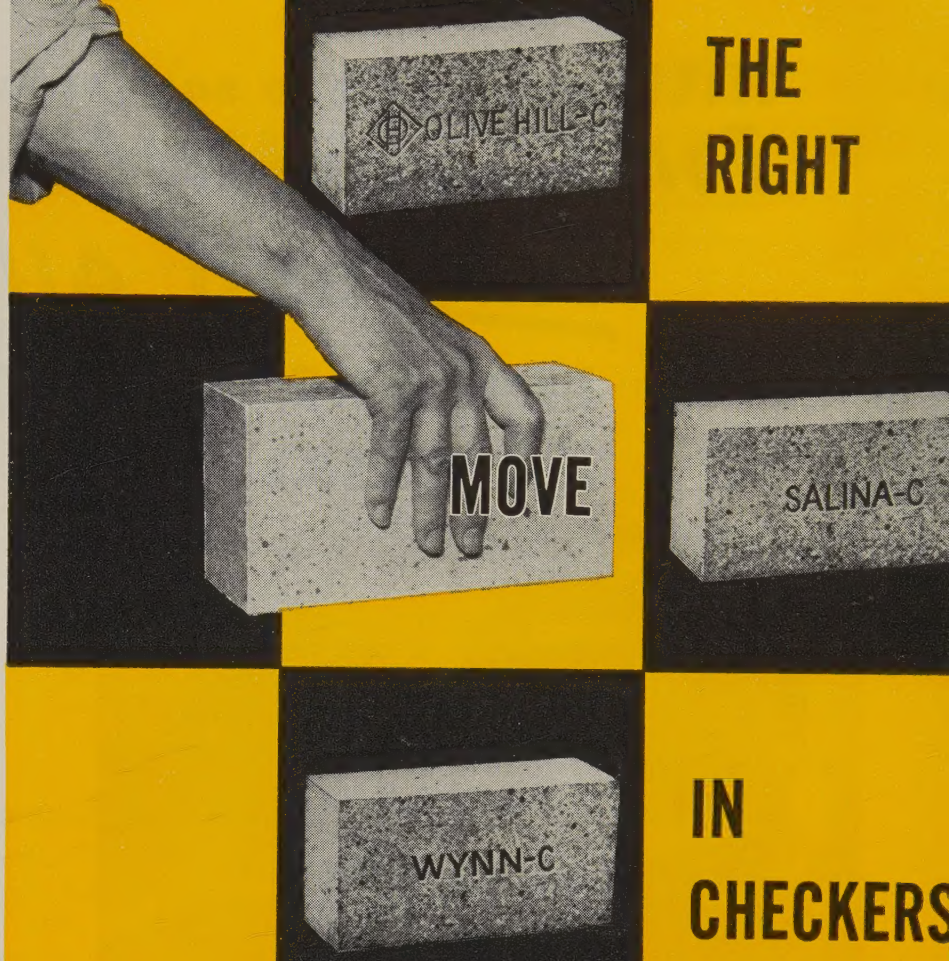
May 13-15, Machinery Dealers National Association: Annual meeting, Plaza Hotel, New York. Association's address: 1346 Connecticut Ave. N.W., Washington 5, D. C. Executive director: R. K. Vinson.

May 14-15, National Association of Sheet Metal Distributors: Spring meeting, Pick-Roosevelt Hotel, Pittsburgh. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

May 14-17, National Tool & Die Manufacturers Association: Spring board meeting, Marott Hotel, Indianapolis. Association's address: 907 Public Square Bldg., Cleveland, Ohio. Executive vice president: George S. Eaton.

May 17-20, American Institute of Chemical Engineers: Spring meeting, Hotel Muehlebach, Kansas City, Mo. Institute's address: 25 W. 45th St., New York 36, N. Y. Secretary: F. J. Van Antwerpen.

May 17-20, Automotive Engine Rebuilders Association: Annual meeting, Royal York Hotel, Toronto, Ont. Association's address: 901 Roosevelt Bldg., Indianapolis 4, Ind.



THE RIGHT MOVE IN CHECKERS

General Refractories offers **superior** high duty fireclay checker brick; possessing all four properties recognized as the criteria for long life in regenerator chambers — high density, low porosity, high strength and refractoriness.

High density and low porosity are needed to insure volume stability, optimum heat transfer and minimum penetration of flux-bearing gases. High refractoriness, coupled with these other properties, is needed to withstand the temperatures prevalent in most regenerator chambers.

Any one of these properties by itself cannot describe an excellent checker. It is the combination of all these properties in one product that produces a superior checker brick.

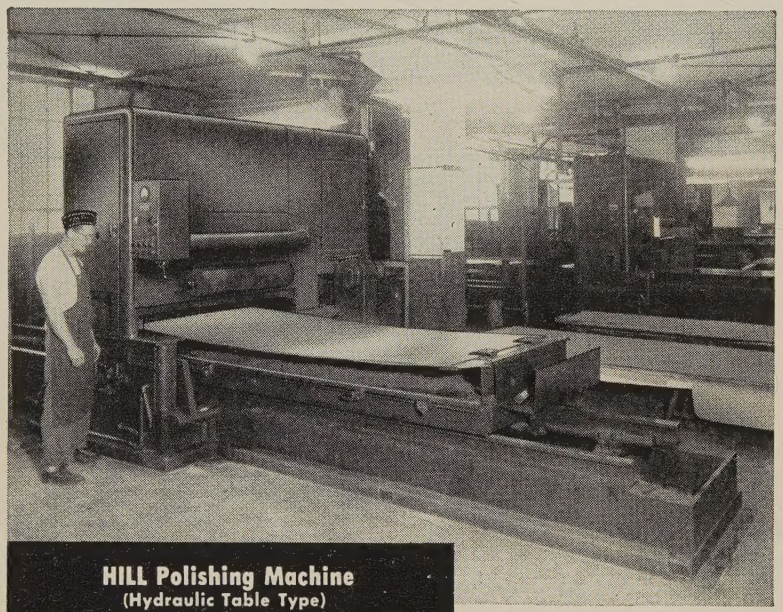
GREFCO checker brick possess ***all*** these attributes. Manufactured from select, highly refractory fire clays; by GREFCO's unique double-tempering process; pressed in special dual-action, deairing power presses, fired to high temperature in tunnel kilns; and given a final rigid inspection for accurate size and quality; General Refractories' "C" brands are superior checkers. Surely, "THE RIGHT MOVE IN CHECKERS" is to — GREFCO!

WRITE FOR NEW LITERATURE ON CHECKER BRICKS

GREFCO

GENERAL REFRACTORIES COMPANY
Philadelphia 2, Pa.

HILL GRINDING AND POLISHING MACHINES
For FINISHING
Any and All
FERROUS and NON-FERROUS MATERIALS . . .



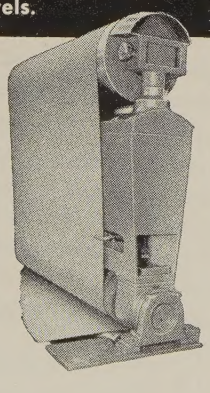
HILL Polishing Machine
(Hydraulic Table Type)
For polishing individual sheets and plates. Hydraulic reciprocating table with centralized controls.

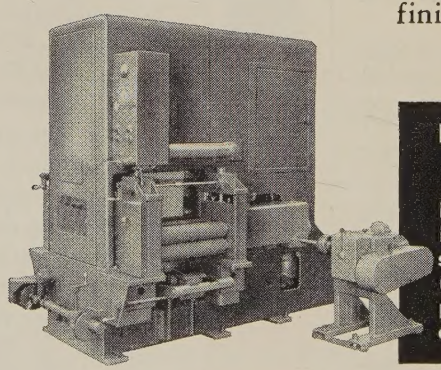
FLAT surfaces of ferrous or non-ferrous material can be brought quickly to the high finish so necessary for today's industrial and consumer products. The dairy, automotive, home appliance and engraving industries are typical of the wide range of application for these precise, labor saving machines.

HILL abrasive belt grinding and polishing machines are built in two general types. The hydraulic reciprocating table type polished individual sheets and plates. Table widths vary from 36″ to 60″. Table lengths range from 60″ to 240″. The Pinch-Roll type is for progressive line polishing. The HILL two-roll vertical head with endless abrasive belt is the basic principle common to both types.

When writing for information please indicate size and specifications of stock to be finished.

The basic HILL two-roll vertical head with upper steel idler roll and lower rubber covered contact or work roll (both dynamically balanced) over which the endless abrasive belt travels.





HILL Grinding and Polishing Machine
(Pinch-roll Type)
For pre-finishing, conditioning and polishing. Used as single units or in multiple units for progressive line polishing in wet or dry operations.

HILL ACME TOOLS FOR INDUSTRY

THE HILL ACME COMPANY

HILL DIVISION
ESTABLISHED 1882
1201 West 65th Street • Cleveland 2, Ohio

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING • THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

The Case of the Vanishing Taxes

Acton Chance, metalworking's answer to Richard Diamond, is back in the pages of STEEL this week. He's reporting on the nation's disappearing taxes. In competitive bidding between foreign and U. S. firms on government contracts, the U. S. companies get a 6 per cent break. Another 6 per cent differential is available to a firm in a labor surplus area. But much government work still goes abroad—in many cases, at a net loss to the U. S. Mr. Chance turns up one case where the loss—to be made up out of your pockets and ours—exceeded $30,000 (Page 100).

Economic Bellwethers Lead Upward March

Screw machines are expected to whir at a $485 million clip this year. That would give the screw machine products industry a year equal to 1957 and $85 million better than 1958. The National Screw Machine Products Association predicts a volume in excess of $500 million next year. This is significant since this industry's sales trends usually precede the trend of metalworking business by about three months . . . March orders for gears rose 17.2 per cent above the February level to the highest volume since May, 1957, reports American Gear Manufacturers Association.

Steel Wage Talks Get Underway

While David McDonald and R. C. Cooper led their bargaining teams into the year's first steel wage talks last week (Page 99), A. R. Maxwell Jr., president, Pittsburgh Steel Co., was laying it on the line to his firm's employees. "The company can afford a strike no more than its employees can," he said, since "a strike costs Pittsburgh $100,000 for each day it lasts." Don't expect the USW to strike one company and not the rest; it'll probably pursue its policy of not working without a contract.

Moonlighting Declines

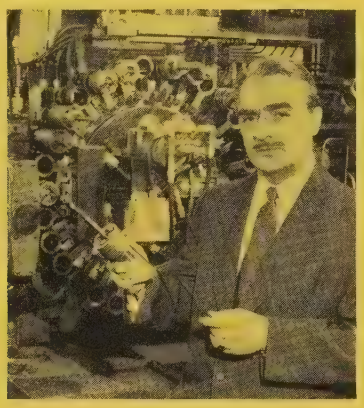
The trend toward multiple jobholding reversed last year, reports Commerce Department. About 3.1 million workers held two or more jobs in July, 1958. That's 500,000 fewer than a year earlier. Farm workers were the largest moonlighting group.

Steel Payroll Hits Record

The steel industry's March payroll climbed to a record $385 million—more than $51 million above the February total. The average hourly payroll cost

also advanced to a record $3.336. Fringe benefits cost the industry an additional 33.2 cents per manhour. More than 103,000 workers have been added to the steel industry's payroll since May, 1958—the recession low point.

Machine Tool Builders See Recession Clouds Lifting



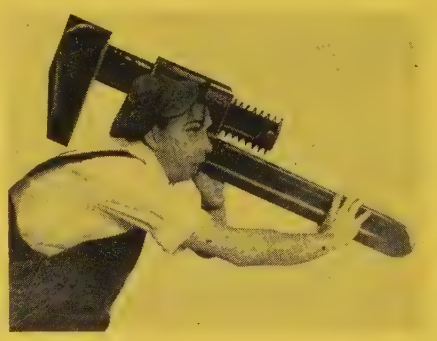
Expect this year's new orders for machine tools to near the $500 million mark (vs. $374 million last year). That's the opinion of most builders questioned by STEEL at the spring meeting of the National Machine Tool Builders Association (Page 106). Francis J. Trecker, president, Kearney & Trecker Corp. (pictured), has reason to be optimistic. A multiplant corporation has informed K&T it will probably need about 60 of the firm's new Milwaukee-Matics in the next few years (Page 149).

Seven Routes to Sales Gains

Production executives aren't the only ones seeking to boost efficiency today; marketing managers are worried, too. The National Industrial Conference Board reports a majority of 131 manufacturing firms surveyed consider inefficiency to be their most pressing sales problem. Companies are trying these remedies: 1. Tightening controls on salesmen's activities. 2. Setting up training courses, conferences, and clinics. 3. Hiring more men. 4. Establishing standards to evaluate performance. 5. Improving bonuses. 6. Redistributing sales strength. 7. Trying new advertising approaches.

How to Combat Employee Fatigue

The man on the right has a common industrial ailment—fatigue. But it's not due to the oversize wrench he's carrying. It's probably because he's bored with his job. Psychological fatigue is one of the biggest drains on productivity. And it's extremely hard to conquer. But there are approaches that can take you a long way toward a solution (Page 114).



Firm Wins Damage Suit Against Strikers

Schacht Steel Construction Inc., Hillside, N. J., was awarded $5133 damages because a union broke a no-strike clause in its contract. A federal judge decided that Local 545 of the International Association of Bridge, Structural & Ornamental Iron Workers violated the no-strike provision by causing a 1½ day work stoppage when Schacht fired a machine tool operator for refusing to run a new type automatic electric welder without a helper. The judge said the question of supplying a helper was arbitrable under the law.

Who'll Get Competition from the Seaway?

Indicative of the foreign competition being felt after the St. Lawrence Seaway opened this month is this list of metalworking goods from England that arrived at Cleveland on *Prinz Willem III*, the first ship to come through the seaway: A lubrication system, musical instruments, electrical measuring instruments, anvil blocks, vertical diesel engines, gas water heaters, parts for high speed threading machines, aluminum castings.

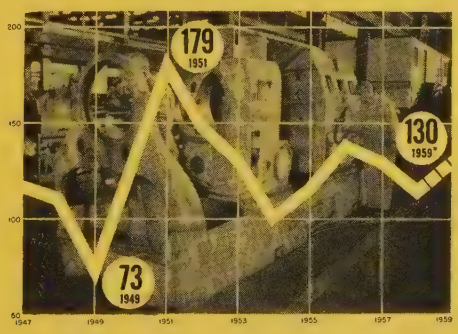
Why the Revolution in Car Buying Habits?

Sputniks and missiles have had a greater effect on the American car market than any other recent factor, claims Louis Cheskin, president, Color Research Institute, Chicago, in his new book, *Why People Buy*. He says the Russian satellites made us feel frivolous and impractical. When the Russian scientist commented that they built satellites while Americans developed fender fins, it hit us where it hurts. Example of the impact: The public's changeabout in its liking for gaudy, functionless ornamentation. Most decorative trim will be gone from autos by 1961, he predicts. The new book goes on sale soon.

On the Automotive Scene

Ford Motor Co. will make parts in Detroit for its new small car, the Falcon. But the car will probably be assembled in Lorain, Ohio . . . Willys Motors Inc. is making a new play for the passenger car market with a dressed-up version of its Jeep utility wagon. Called the Maverick Special, it lists for $1995 without freight and local charges . . . U. S. car producers have their assembly lines geared for 3,272,400 units in '59's first half, signaling a 12-month total of 5.95 million to 6.2 million units, indicates *Ward's Automotive Reports*.

Used Machinery Sales Start Climbing



February sales of used machinery were the highest for any month since April, 1957, reports Machinery Dealers National Association. The long term outlook is bright (Page 107). A 500 plant survey by Research Associates, Detroit, shows a projected annual market of $650 million.

Aluminum Gets Foot in Door of West German Building

Building with aluminum has shown sharp increases recently in West Germany, reports Alcoa's D. D. LaVorene. "Curtain walls and windows of

aluminum will make their way more strongly in Germany," says W. F. Wildschutz, managing director, Aluminum-Zentrale E.V., the German aluminum association. Per capita consumption of aluminum in West Germany is expected to hit close to 20 lb in 1961 vs. 10 lb in 1956. In the U. S., consumption is 25 lb per person.

Government Reports First Nuclear Production Data

The market for atomic energy products exceeded $100 million in 1957, reports the Commerce Department in its first survey of the nuclear industry. Breakdown: Reactor vessels and tanks—$11 million; accessory instrumentation for reactor control—$9.5 million; heat exchangers—$8.3 million; pumps —$6.2 million; valves—$7.8 million; radiation detection and monitoring devices—$17.5 million.

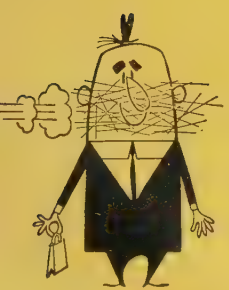
Lathemaker Moves Against Obsolescence

Here is a lathe that can be adapted to meet changing production requirements and improving technology. It's the new Clearing-Axelson Blue Chip that features a welded steel headstock and bed for the rigidity needed to machine high strength alloys with carbide and ceramic cutters. Available with any size or type of bed, it can be adapted to power speed selection and perhaps numerical control later (Page 144).

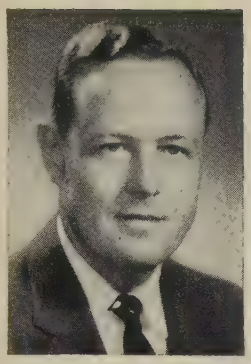
Bethlehem, GM Report Profit Gains

Bethlehem Steel Corp. had first quarter net income of $49.5 million, up from $24.8 million a year earlier but below the $57.6 million reported in 1958's last period. Bethlehem expects the industry operating rate to average 95 per cent in the second quarter and 60 per cent in the third quarter . . . General Motors Corp. reports net income of $293 million in the first quarter vs. $185 million in the year-earlier period.

Straws in the Wind



Small businesses got 31 per cent more government contracts during 1959's first quarter than they did in the year-earlier period . . . Inland Steel Co. says it can't get as many workers as it needs at its big Indiana Harbor Works; it has resorted to field recruiting for the first time since 1957 . . . National Steel Corp. plans to finance its $300 million expansion through the sale of $80 million worth of first mortgage bonds due in 1989 . . . About 155 million lb of plastic will be formed into sheets this year (vs. 140 million last year), predicts Society of the Plastics Industry . . . One oddity coming out of hearings on Senator O'Mahoney's "Price Notification" bill: David McDonald took a stand against it while Walter Reuther supports it. The bill is not expected to become law.



Labor Bill—Only a Start!

The three year parade of several hundred witnesses before Sen. John L. McClellan's Labor Rackets Committee at long last has resulted in the passage of labor legislation (the Kennedy-Ervin Bill) by the Senate.

Witnesses related endless stories of the misuse of funds, corruption, political graft, gangsterism, and the irresponsible use of tremendous power and influence.

The Senate bill—yet to pass the test in the House—plugs some of the loopholes left in the Taft-Hartley Act (passed 12 years ago).

Among other things, it requires unions to make yearly financial reports to the secretary of labor and union members; to hold democratic elections; to keep racketeers out of office; and to report on loans to officers. It bars picketing to force an employer to recognize a union if he has already recognized another union.

Even if the Kennedy-Ervin Bill succeeds in the House in its present form, it will leave much to be desired in clearing up some of the vicious labor practices, such as the secondary boycott, uncovered by the McClellan Committee.

And it will not go far enough in placing the control in the hands of union membership where it belongs. As evidence of the need, an independent survey indicates that many members of the United Steelworkers are fed up with the spiral of prices and taxes accompanying each wage increase.

Yet USW President Dave McDonald is asking the steel industry for higher wages and other concessions that do not make sense to the rank and file.

As Harold J. Ruttenberg (former research director of the USW and now president of the Stardrill-Keystone Co.) said last week: "What the steel unions need more than higher wages is full time work and steady pay the year around."

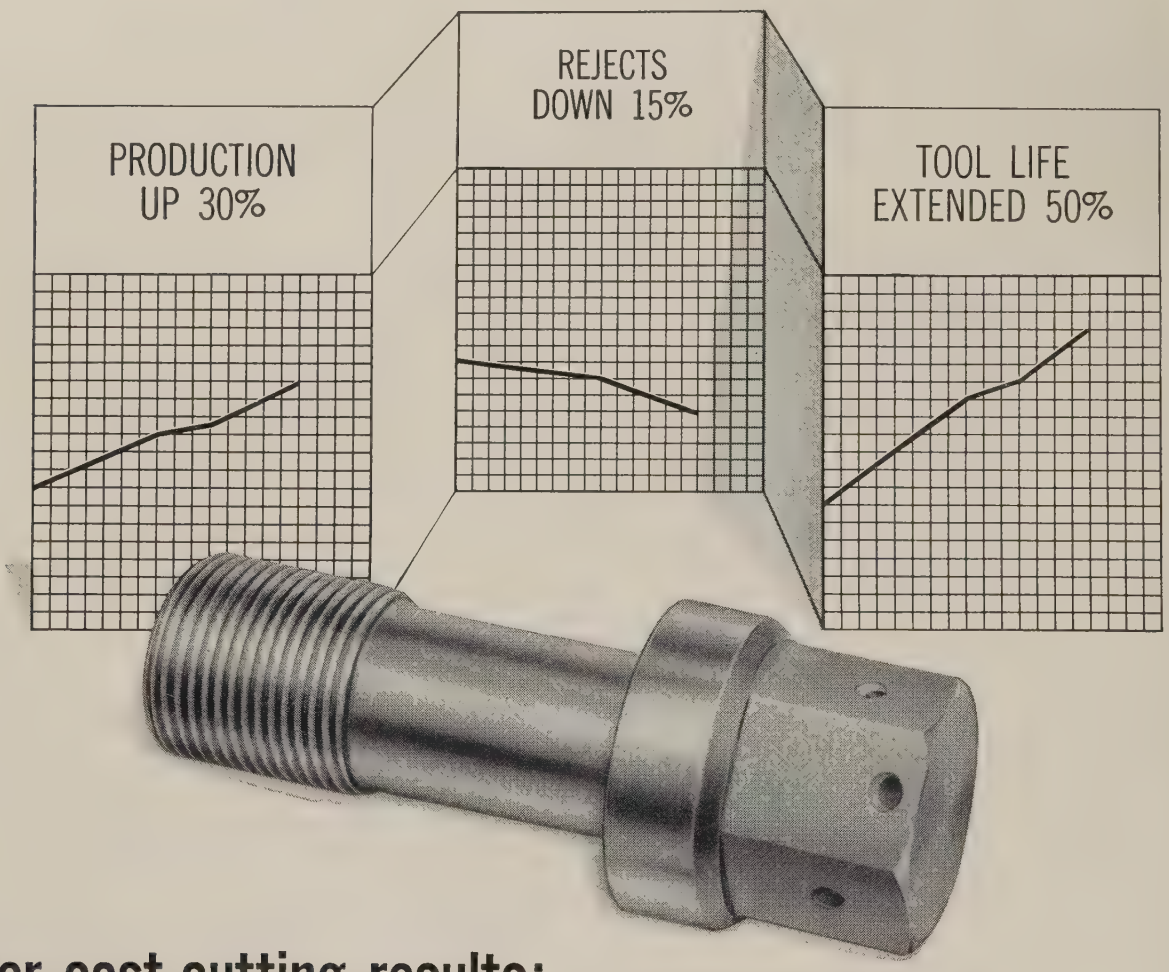
So far, no union leader has been willing to exercise true statesmanship in providing what members really want. So it is up to Congress to enact legislation that will be fair to the workingman, to management, and to the public.

The watered down Senate bill is only a start!

Irwin H. Such
EDITOR-IN-CHIEF

Value analysis boosts production 30%

This was the outstanding result when a metalworking company studied and evaluated production of piston pin bolt heads with a Ryerson representative. The Ryerson specialist recommended Rycut® 40—the world's fastest machining alloy steel in its carbon range.



Other cost-cutting results:

In addition to boosting production, this risk-proof Ryerson alloy reduced rejects 15% . . . increased tool life 50% . . . and gave parts a better finish. Ryerson value analysis of materials and methods may help solve some tough problems for you. Contact your nearby Ryerson plant for details.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND® Steel Family

STEEL • ALUMINUM • PLASTICS • METALWORKING MACHINERY

NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

Management's Cooper (left), labor's McDonald trade views, show . . .

Steel, Union Far Apart as Talks Open

WHAT HAPPENS when the irresistible Mr. McDonald meets the immovable Mr. Cooper?

That's what newsmen wondered when they crowded into New York's Hotel Roosevelt last Tuesday for the opening of contract talks between the steel industry and its union. After the first day's session, they were still wondering. This much was clear:

- Both sides want a speedy, strike-free settlement that's noninflationary and fair to everybody—industry, stockholders, employees, customers, and the public.
- Neither side has retreated an inch from previously announced, seemingly irreconcilable positions.

As 162 negotiators for labor and management moved into the Roosevelt's ornate Palm Terrace, two men stood out: David J. McDonald, president of the United Steelworkers, and R. Conrad Cooper, executive vice president-personnel services of U. S. Steel Corp.

• **Battle Lines Drawn**—Mr. McDonald declared that the USW sees "deficiencies" in programs adopted in 1956—problems related to grievance procedure, seniority, rates of pay, weekend premiums, and other benefits. Insurance and pension programs require "further substantial improvement," he asserted, and the SUB (supplemental unemployment benefits) program has "many inadequacies." He emphasized: 1. The need for "substantial improvement" in wages. 2. The need for greater employment.

Mr. Cooper, leader of the industry's bargaining team, answered by restating the companies' position: "The one and only sure way we know of to accomplish this result (a noninflationary settlement) would be to continue present wages and other benefits, without change, for one year beyond June 30, 1959."

• **Industry's Stand** — R. Heath Larry, a U. S. Steel vice president, declared: 1. Rapid increases in employment costs are a principal cause of inflation. 2. Steelworkers are better off than most manufacturing workers. 3. Their gains have outstripped increases in productivity. 4. They're pricing themselves out of markets here and abroad. 5. Wage increases can't be met out of profits.

Arthur J. Goldberg, general counsel of the union, argued that steelworkers deserve higher wages because of higher manhour output.

• **White House Warning** — Both Messrs. McDonald and Cooper addressed themselves to the question of government intervention. Asked about President Eisenhower's plea for "statesmanship" and warning that the U. S. "cannot stand still and do nothing," Mr. McDonald referred to his prepared remarks: "It is up to us to conduct ourselves in such a way as to reach an accommodation of our various interests which will be fair." Said Mr. Cooper: "We would like to do the job ourselves. It's our responsibility and we'll discharge it."

After the first week's meetings between the USW and the 12 participating companies, the talks will probably recess. When they're resumed later this month, the industry's four man team (Messrs. Cooper, Larry, J. H. Morse of Bethlehem Steel Co., and H. C. Lumb of Republic Steel Corp.) will knuckle down to some hard bargaining with the union's big four (Messrs. McDonald, Goldberg, Howard Hague, and I. W. Abel).

The Case of the

VANISHING TAXES

How much does the government save when it awards U. S. contracts to companies overseas? It may actually lose money because it won't get taxes from the American firms (and their employees) that didn't win the job

I TRIED to keep my eyes on a portrait of George Washington directing the battle of Yorktown, but they kept drifting to the breastwork on display at the receptionist's desk.

This was the office of a U. S. official, and I, Acton Chance, private investigator, must observe decorum or I wouldn't get my first interview in my first government case.

It all started only yesterday. I had let the phone ring until I finished my 4 o'clock Dixie cup of bourbon.

"Mr. Chance, I'm a government official and want you to investigate a matter for us. We liked your technique in the Case of the Vanishing Jobs (STEEL, Apr. 6, p. 99). This problem is similar. Call it the Case of the Vanishing Taxes. Phone (censored). He's waiting to vouch for me. Then ring Operator 35 to get me back."

The phone clicked, leaving my mouth open to emit the bourbon fumes. I checked. I called back.

"Chance, we're losing tax revenues."

I mumbled about profits being off, about fudging on deductions.

"We know all about those. The disappearing taxes I'm talking about are the ones we're no longer getting from companies and people that do government work. We want you to find what's wrong."

I took the case. I even took a date with that receptionist. From her, from U. S., and industrial officials, I finally had my facts. This is my report.

In competitive bidding among foreign and U. S. firms on government contracts, the U. S. companies get a 6 per cent break. The lowest American bid may be 6 per cent above the foreigner's. Under the Buy American Act, the U. S. firm wins. Another 6 per cent differential is available to a company in an area designated labor surplus by the U. S.

The basic and first 6 per cent differential has the loss of tax revenue as one of its considerations. But that's not the real reason for the differential setup. Originally, the Buy American concept was anti-depression in nature. From 1934 to 1954, the differential was 25 per cent. It was lowered to 6 per cent five years ago by Executive Order.

William H. Speck, associate counsel, Bureau of Yards & Docks, U. S. Navy, says: "Maybe those who wrote the Executive Order on the 6 per cent figure considered the loss of tax revenues, but in procurement we don't take them into account."

And U. S. procurement officers can't. Their directives are clear, and they have no choice but to give contracts to companies abroad if bids are low enough.

But the accompanying work sheet gives a typical case of how the government loses taxes even when the winning foreign bid is far below the American. In this case alone, we suffered a net loss in revenues of $30,000. What's more, the government also lost on direct income taxes from the suppliers of goods and services all the way back. The U. S. also lost on social security, excise, and other indirect taxes.

As I finished putting my report into code to be transmitted to my client, I thought that this loss to the government is coming out of your pockets and mine. I shook my head. It was 30 minutes before my 4 o'clock bourbon, but I filled a Dixie cup to the brim anyway.

The Facts As I Found Them

ACTON CHANCE—
Metalworking's Private Eye

Domestic Company	Foreign Company
BIDS ON NAVY SHIP PLATE CONTRACT	WINS SHIP PLATE CONTRACT
IS UNDERBID	SAVES NAVY **$37,000** WITH LOW BID
DIRECT TAXES LOST: **$67,000** (Plus Other Indirect Taxes)	U.S. INCOME TAX: **None**

So-o----

That's Good!

That's Bad!

That's Terrible!

Net Loss to U.S. $30,000

Hey--- That's us!

Guess Who Pays Deficit?

An extra copy of this article is available until supply is exthausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio

TVA Ups Tempo in Buy American Fight

PRESSURE on the Eisenhower administration in the "Buy American" battle is reaching lid-popping proportions.

Tennessee Valley Authority's latest request for bids on an estimated $50-million-plus worth of new generating equipment may provide the test. Here's why:

• **Half Foreign, Half Domestic**—On Apr. 10, TVA invited six firms to bid on 16 turbogenerators for delivery starting Sept. 1, 1962. Three of the companies are foreign; three are American—Allis-Chalmers Mfg. Co., General Electric Co., and Westinghouse Electric Corp.

By the middle of last week, none of the American firms had submitted bids—they're due in by May 26. It's rumored that they will not submit bids in a move to spotlight the situation.

• **Background of Hassle**—Early this year TVA bought a 500,000 kw turbogenerator from C. A. Parsons Ltd., England, one of the foreign firms invited to bid again. (The others: English Electric Co. and Brown Boveri Corp. of Switzerland.) TVA told the American builders that it would pay 20 per cent more for the equipment to keep the work at home. But Parsons' price was 50 per cent below that of GE and Westinghouse.

In March, GE and the National Electrical Manufacturers Association petitioned the Office of Civil & Defense Mobilization not to honor bids on heavy, electric power producing equipment from foreign companies.

The domestic equipment builders need business badly.

They contend that the low priced foreign competition may hurt their industry so that it could not produce equipment needed in an emergency.

• **No Decision Yet**—A ruling on the petition has been expected "momentarily" for weeks from the OCDM. But the problem is not easily resolved. Foreign competition is giving the administration a new headache almost every day. "Making an exception in this case," says one source, "is almost certain to bring in a whole new batch of industries wrapping themselves in national security in their tariff requests."

One thing seems almost sure: The foreign firms will get the order even if the American manufacturers submit bids—unless the OCDM decides not to honor the foreign bids. A differential on the order of 30 per cent would seem almost impossible to overcome. (IUE President James Carey urged that the three U. S. companies make "realistic" bids to get the jobs.)

• **Complicating TVA Problem**—The bids asked for are not commitments to buy. TVA estimates it'll need 900,000 kw in new generating capacity each year to take care of its growth. It's now appealing to Congress to sell revenue bonds in the open market to finance the expansion (a similar appeal failed last year).

One Capitol Hill source says that orders for turbine and delivery dates won't be determined until financing arrangements have been completed.

Big Steel Has New President

C. F. Hood retires

W. F. Munford steps up

THE WORLD'S BIGGEST steel producer got a new chief last Tuesday. Walter F. Munford, 58, replaced retiring Clifford F. Hood, 65, as president and chief administrative officer of U. S. Steel Corp. Roger M. Blough continues as chairman and chief executive officer.

Mr. Munford was executive vice president-engineering and research. He worked in American Steel & Wire Div. mills during summer vacations while attending Worcester Polytechnical Institute and Massachusetts Institute of Technology. In 1923, he started full-time employment with the division as an open hearth helper. He became superintendent of the open hearth department at Newburgh Works, Cleveland, in 1927. He moved up through the ranks to become president of AS&W in 1953, and assistant executive vice president-operations for the corporation in 1956.

Married in 1924, he has two sons. He's a member of the American Iron & Steel Institute and Lambda Chi Alpha fraternity. He's a Mason.

Mr. Hood, a 40 year veteran of the steel industry and president of U. S. Steel since 1953, stepped down upon reaching (in February) the corporation's normal retirement

age. (This surprised some industry observers who expected him to hold the post until after this year's labor negotiations were completed.) He will continue as a member of the board and executive committee of the corporation.

A former Illinois farm boy, Mr. Hood earned an electrical engineering degree at the University of Illinois and began his career with U. S. Steel in 1917 as an operating clerk in the electrical cable plant of AS&W. He became vice president-operations of AS&W in 1935 and its president three years later. In 1951, he became executive vice president-operations for the corporation and was elected president on Nov. 25, 1952.

Wages Cloud Ore Situation

"Can we continue to expand our iron ore operations in this country, or will we have to expand faster in Canada and South America to maintain our strong competitive situation?" asked Walter A. Sterling, president, Cleveland-Cliffs Iron Co., Cleveland.

Mr. Sterling's answer: "If labor costs increase, we must limit any further expansion to taconite and jasper operations in the Lake Superior area and Canada . . . and to foreign direct shipping ores."

Wages in steel are considerably higher than they are in any other basic industry. Underground mining jobs have an even higher average than steel's. Mr. Sterling declares: "I feel that steelworkers should see that they are pricing underground ores out of competition.

"We have come a long way in partially offsetting increased labor costs," he continues, "through reducing overhead and improving production methods. But the productivity of labor has not increased commensurate with our expenditures to improve things. Further increases in labor without an adequate increase in ore prices may force us to curtail production from underground mines."

Mr. Sterling emphasized the growing threat of foreign competition now that the St. Lawrence Seaway has opened. Last year, 25 per cent of the ore consumed in the U. S. was from foreign mines.

Vanadium-Alloys Finishes Expansion

A $3.5 MILLION expansion of steel producton, finishing, and delivery facilities has been completed by Vanadium-Alloys Steel Co., Latrobe, Pa.

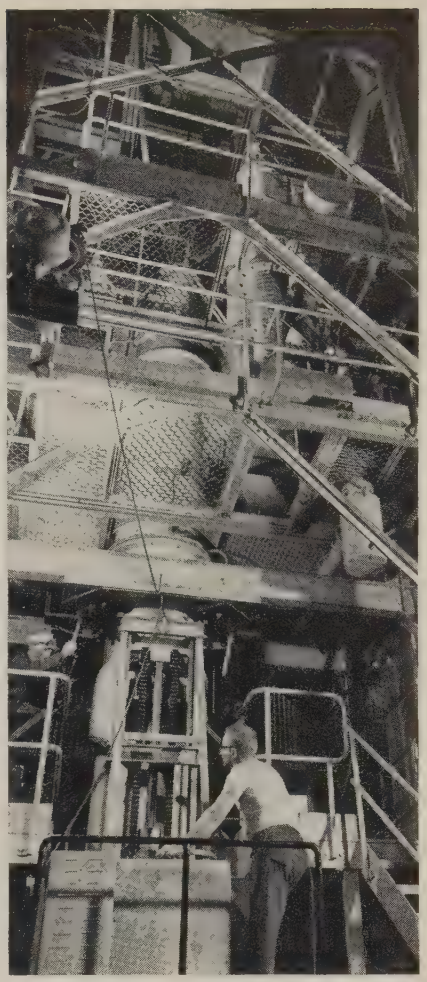
The program includes a new vacuum melting furnace; a continuous, controlled atmosphere annealing furnace; and two rolling mills (a 16 in. and combination 10 and 12 in.) at the Latrobe plant. Also completed is a 2000 ton, vertical, hydraulic forging press at the firm's Colonial Steel Co. Div., Monaca, Pa. Auxiliary heating and handling equipment and test and inspection facilities have been installed at both sites. The new buildings cover 97,000 sq ft.

• **Furnace Outstanding**—The consumable electrode, vacuum melting furnace (capacity: 4 million lb annually) features flexibility of ingot size (diameters: 9 to 24 in.; weights: 500 to 8500 lb). Uniformity of arc control is maintained.

Its vacuum pumping system is highly efficient. Pressure is kept below 5 microns—equivalent to a vacuum containing but 1 atom in a volume that contains 152,000 atoms at normal pressure. Other furnaces run at 50 to 100 microns.

The furnace was designed by Vanadium-Alloys and built by Consolidated Electrodynamics Corp., Rochester, N. Y. It uses interchangeable copper ingot molds which are expected to last 100 to 500 heats. Cost: $2000 to $4000 each.

• **Not for Tools**—Designed principally to make bearing steels and high alloy material for aircraft and missiles, the furnace will not produce steels for dies or cutting tools. Dr. George A. Roberts, vice persident, technology, says the notion that all tool steels will be vacuum melted within a few years is erroneous. He doesn't think users will pay a premium for properties they don't really need.



Vanadium-Alloys Steel Co.'s new vacuum melting furnace

West Canada Gets Mill

Construction of Western Canada's first iron and steel smelter will start immediately at Kimberley, B. C. It will mark the first stage of an integrated iron and steel operation by Consolidated Mining & Smelting Co. of Canada, Montreal, Que., for the production of pig iron, steel ingots, and rolled steel products. Planned annual capacity: Over 100,000 tons. Cost: More than $20 million.

Large reserves of iron tailings, coal, limestone, and hydroelectric power in the area provide an ideal climate for electrothermic iron and steel production.

The initial installation includes sintering and furnace feed facilities (annual capacity: 100,000 tons of steel) and one electric furnace (annual capacity: 36,500 tons of pig iron). Production is scheduled for early 1961.

The company plans to add a second large furnace, oxygen blown converters for steel ingot production, and fabricating facilities in the near future.

Why Companies Failed in 1958

Cause	Manufacturers	Total Business
Incompetence	53.2%	44.1%
Lack of experience	40.2	47.9
Neglect	2.3	3.4
Fraud	2.1	2.1
Disaster	1.5	1.3
Cause unknown	0.7	1.2
Total	100.0	100.0
Number of failures	2680	14,964
Average liabilities	$91,641	$48,667

Source: Dun & Bradstreet Inc.

BUSINESS FAILURES reached a postwar high of 14,964 (with liabilities of $728 million) in recession-troubled 1958. Failures among manufacturers increased for the second consecutive year, says Dun & Bradstreet Inc.

The shock of the economy's downturn was felt in the first half when casualties climbed 14 per cent above those in the 1957 period. In the second half, the rate of increase was down to 4 per cent.

• **Trend Turns Down**—The downtrend stretched over into the first quarter of this year—3697 businesses, with liabilities of $197 million, closed. Compared with 1958's first quarter, it means an 8 per cent decline in number of failures, a 2 per cent decline in dollar liabilities.

Dun & Bradstreet's figures do not include all business closings, but only those firms involved in actions likely to end in losses to creditors.

• **New Firms Hardest Hit**—Businesses in their first five years of operation still dominate the casualty list, accounting for 57 per cent of all casualties. But the rate among firms over ten years old is also up—from 11 per cent of the total in 1948 to 21 per cent in 1958.

Geographically, most failures last year involved businesses in large industrial cities and were concentrated in four regions: New England, Middle Atlantic, South Atlantic, and East North Central states.

In relation to the operating business population, the failure rate remained moderate—56 per 10,000 enterprises. That compares with 70 per 10,000 in 1939 and the record 154 per 10,000 in 1932.

AEC Offers Safe Isotope

The Atomic Energy Commission is offering 1 million curies of tritium to industrial users. Demand for the gas (an isotope of hydrogen) has been on the uptrend the last two years.

Tritium has a half-life of 12.5 years and emits low energy beta particles with no hazard of penetrating gamma radiation. The beta particles emitted are identical to the electrons which bombard the screen of a television set.

It's being used to make luminous instrument dials, runway markers, emergency exit signs, and darkroom lamps. New applications being developed: Experimental fluorescent light tubes which require no starters or transformers and tracer devices for oil well stimulation and refinery operations.

Licensed users may buy it from the AEC's Oak Ridge, Tenn., National Laboratory at $2 per curie.

Uranium Output Climbs

Domestic production of uranium last year jumped to 24,837,325 lb of U308 concentrate (vs. 16,964,262 lb in '57), reports the Atomic Energy Commission.

Twenty-three producing mills were in operation vs. 16 in 1957.

Production by states: Colorado, eight mills produced 5.8 million lb; Utah, four mills turned out 7.8 million lb; New Mexico, six mills produced 7.2 million lb; five mills in Arizona, Washington, South Dakota, and Wyoming produced 4 million lb.

Cans: New Aluminum Target

Aluminum cans may capture 20 per cent of the metal container market within ten years, predicts R. F. Newcomb, vice president, commercial development, Canco Div., American Can Co., New York. Economics and problems arising from the use of a light gage metal are major hurdles.

Mr. Newcomb reports soldering problems suggest that seamless processes, such as extrusion, drawing, and ironing, are most suitable for aluminum cans. Prices approach those of tin plate on a gage for gage basis, but the light metal containers must be heavier gage to resist buckling and paneling.

Gas Group Cites Progress

The Liquefied Petroleum Gas Association cited three major advances in 1958 at its 28th annual meeting and show in Chicago: 1. Reduction of freight rates on L-P gas (up to $250 per tank car, or 36 per cent). 2. A new code, offering one set of standards for all types of home fuel gases. 3. Significant steps taken toward uniform technical standards for installing home gas equipment.

When to Replace Your Equipment

"ONE of the greatest hidden risks in production operations is the high cost of keeping equipment that is useful but no longer profitable," says Jones & Lamson Machine Co., Springfield, Vt.

The company has developed a capital goods replacement formula which could help you avoid that risk and also help you make decisions.

• **The Kernel**—The formula puts a proposed replacement project in terms of avoidable costs which would be incurred by postponing an equipment purchase for one, five, or ten years. It projects costs or savings over the life of new equipment and allows for additonal costs created by inflation. Built into the computation are provisions for increases in labor and other costs, as well as estimated new equipment prices for the related periods.

• **Simplified Forms**—The operation of the formula is shown in the exhibits below. In the replacement data sample, the descriptions, ages, and worths of old and new machines are detailed. All avoidable costs or savings are listed in the cost comparison section. Computations of avoidable costs and evaluation ratios are contained in the exhibit to the right.

Though not shown, two tables are used with the formula which project indexes of past trends. One projects wage and material cost factors, and the other projects replacement cost factors for metalworking machinery. Both are based on Bureau of Labor Statistics reports.

• **Aids Comparison Making**—With the tables, you can rate one replacement against another by establishing the ratio of avoidable costs to the cost of new equipment. Caution: The ratio should be drawn for several periods. A project may show a high ratio for one year, but over another period, the ratio may shift to favor a different project.

The company says the formula cuts through limitations and fallacies found in many commonly used formulas. It does not analyze a replacement project in terms of the rate of return on investment, the time it will take to return the

Sample Replacement Data

Name of Machine	Old Equipment: 4 Engine Lathes Without Bar Equipment*	New Equipment: 2 Turret Lathes with Hydraulic Drive & Bar Equipment**
Type, size, & horsepower	14" x 30"—7½ HP	Ram—5-2½—20 HP
Year manufactured	1939	1959
Year acquired	1939	1959
Original cost	$25,464	$54,000
Present book value	$ 0	$54,000
Present market value	$ 400	$54,000
Estimated life of usefulness		15 Years

Cost Comparison (One Year)

	Avoidable Costs or (Savings)
1. Direct labor	$15,000
2. Indirect labor	2,000
3. Fringe benefits	4,500
4. Spoilage in manufacture	1,000
5. Maintenance—ordinary	100
6. Maintenance—repair	400
7. Power	(600)
8. Perishable tools	
9. Taxes & insurance	(1,600)
10. Depreciation	(3,600)
11. Other (list):	
12. Total avoidable costs for one year	$17,200

*One operator—each machine. **One operator only—runs both machines.

Avoidable Costs Incurred By Postponing Replacement

	For 1 Year	For 5 Years (2)	For 10 Years (2)
Avoidable costs From current cost comparison (From Line 12)	$17,200	$17,200	$ 17,200
Avoidable costs From current cost comparison $17,200 times number of years	.....	86,000	172,000
Factor for projected increase in labor & material cost $17,200 times 27.63% (1)	.....	4,752	.....
$17,200 times 62.90% (1)	.....	.....	10,818
Factor for projected increase in cost of new equipment $54,000 times 38.0% (1)	.....	20,520	.....
$54,000 times 76.3% (1)	.....	.....	41,202
Total avoidable costs incurred	$17,200	$128,472	$241,220
Proposed investment in new equipment	$54,000	$54,000	$54,000
Ratio of avoidable costs to costs of new equipment (For rating one replacement project against another)	31.9%	237.9%	446.7%

(1) Jones & Lamson projections based on Bureau of Labor Statistics reports.

(2) Beyond first year.

investment, or the period needed to obtain a favorable cash flow. Such concepts, Jones & Lamson says, ignore the avoidable costs which would mount if a replacement decision is delayed.

Jones & Lamson has four-page forms available which include the two samples reproduced on Page 105, the projection of indexes, and instructions which could help you solve replacement problems.

Machine Tool Sales Pick Up

Builders are optimistic. They expect the uptrend to continue. But losses in the world market are still a recovery brake

MACHINE TOOL builders now can smile when you ask: "How's business?" Their industry has fought its way off the recession floor, and all bets are for a "fair" year in 1959—a considerable improvement over a dismal 1958.

At the spring meeting of the National Machine Tool Builders Association, members seemed to be convinced that a real upturn has taken place. Estimates of this year's new orders ran $500 million, up from 1958's $374 million.

• Specials still lagging.

Standard machine builders reflect most of the optimism. The makers of specials, who rely heavily on automotive dollars, still feel the pinch. Automotive programs are mostly seldom and small. Even the few dollars that do come out of the automotive industry are being spread thinner; tool and die shops and other small special equipment makers have turned to machine tool bidding as a way out of their private recession.

• Loss of position in the world market is the industry's biggest single problem.

Domestic builders find it increasingly tougher to compete in the world machine tool market (and that includes the U. S.). The wage differential, often 4 to 1 in favor of foreign builders, is the main deterrent.

The problem is not confined to machine tools. Ralph J. Kraut, association president, told members: "The Americans are pricing themselves out of the market. If present trends continue, the U. S. will no longer be the world's leading manufacturing nation."

Mr. Kraut, also president of Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., cited: "In 1957, the builders in England and Germany did more total machine tool business than we did. In 1958, it's probable that each one of them outproduced us."

To solve, or more likely alleviate, the problem, Mr. Kraut says the first step is to halt inflation. He also challenges industry to convince labor that productivity must get ahead, and stay ahead, of wages.

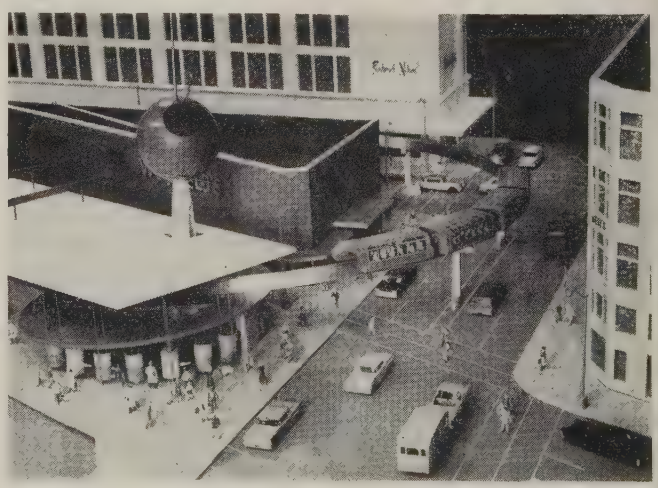
Finally, machine tool builders are unanimous in their condemnation of depreciation policies.

• "Realistic and adequate depreciation reforms are a must if our industry and our economy are to prosper in the brutally competitive international business struggle we face."

That's the way N. M. Forsythe, president, National Automatic Tool Co. Inc., Richmond, Ind., and chairman of the association's taxation and renegotiation committee, summed up the writeoff crisis. Pointing at the more liberal allowances permitted by nearly every other government, Mr. Forsythe says the U. S. system acts as a "powerful brake on plant improvement and modernization."

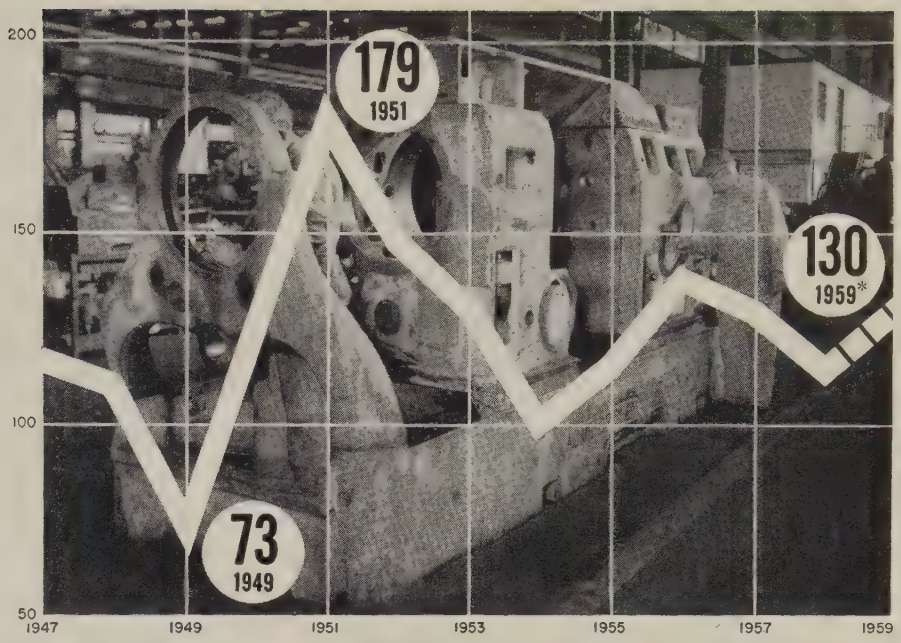
The industry hopes to whip this problem by, first, educating the public on the inadequacies of the present system and showing the consequences, and, second, by acquainting the congressmen with the need for a more liberal policy.

Many builders believe such an approach can help the U. S. compete here and abroad.



HERE'S A PREVIEW OF TOMORROW'S city transportation. Northrop Corp.'s Gyro-Glide (above) would be constructed primarily of aluminum; a four-car train would be 230 ft long, carry 256 passengers, and weigh about 57 tons fully loaded. At right is the airlinerlike monorail system designed by Lockheed Aircraft Corp. for Seattle's Century 21 Exposition which will open May 10, 1961. Visitors to the exposition will ride the monorail to the scene from downtown Seattle in 94 seconds. Estimated cost (with three "airtrains"): $5 million

Sales of Used Machinery Heading Up



(1947-49 equals 100)

*Estimated by STEEL.
Note: Index is in terms of dollar volume.

SALES OF used machinery are up. The February sales index (latest available) from Machinery Dealers National Association stood at 148 (1947 - 49 = 100), the highest monthly volume since April, 1957. Last year, 40,000 to 43,000 units were sold. Value: At least $200 each.

The long term outlook is bright. A survey of 500 plants by Research Associates, Detroit, shows: 1. A projected annual market of $650 million. 2. An average plant expenditure of almost $20,000 on used and rebuilt tools every two years. 3. One-third of all tools in operation were bought second hand.

The most optimistic report comes from Detroit Machinery Exchange, Detroit. Its sales are triple year ago levels. The firm's success may be affected by the surplus of used tools in its area. Many tool and die shops were forced out of business last year.

R. Douglas Williams, Williams Machinery Co., Newark, N. J., thinks sales may be up 6 per cent. Much of the planned capital expenditures by manufacturers will be for replacement of facilities rather than for expansion. Mr. Williams points out that used tool sales usually follow new machinery order trends by 30 to 60 days.

• **Recession Blues**—All is not rosy. A New York company remains in a slump because it can't get items like heavy hammers and large presses for customers. In the red in 1957, the firm's business dropped another 25 per cent last year despite stringent cost cutting. It reports about a 15 per cent improvement this year. A spokesman complains that some customers are "a little difficult about high priced merchandise." However, he admits they're more receptive than they were last year.

Another New Yorker reports sales are 10 per cent better this year than last. But he had a 40 per cent decline in 1958 from 1957.

• **Plenty of Shoppers**—Galbreath Machinery Co., Pittsburgh, says inquiries are coming in better than they did in late 1958. Sales are up 25 per cent so far this year. The firm contemplates a return to its prerecession level, although early 1959 inquiries included a lot of price shoppers. With new equipment available for quick delivery, prices are competitive.

In Chicago, Interstate Machinery Co. Inc. recorded a 30 per cent boost in sales during the early months of this year, compared with the same period in '58. The market is particularly active in equipment built since 1949. The company says structural, fabricating, and stamping machinery is bringing good prices—"up slightly from last year's." It has no trouble finding buyers.

Horse trading is going on in such heavy equipment categories as used rolling mill equipment, says Albert Curry & Co. Inc., Pittsburgh. (Used machinery is a sideline to its new rolling mill line.) Most dealers say prices are firmer this year than last. In some cases, higher costs of reconditioning old tools have helped push prices of such equipment up.

• **Role for Used Equipment**—The used machinery dealers' special province is his ability to deliver immediately, says R. K. Vinson, executive secretary of the 225 member MDNA. Good used tools are not hard to find.

Used machinery is often purchased for short production runs. The manufacturer can resell the tool at a big saving.

• **Buying Tips**—Used tools come in three types: 1. As is. 2. Reconditioned. 3. Rebuilt. MDNA members respect an industry code of ethics which guarantees rebuilt machines, says Mr. Vinson. It includes the right to return the machine within 30 days if it does not operate as represented by the dealer. "As is" tools carry no guarantee.

Reconditioned machines are operated under power, cleaned, and painted. All broken parts are disassembled and tested under power. Worn out and broken parts are replaced, and compensations are made for excessive wear.

Most dealers specialize in one or more types of equipment. Some do their own rebuilding. Others use specialists. Company employment averages about 25, although some firms may have 500.

Vinson Attacks Aircraft Industry

Year	Firm	Per Cent Profit on Own Invested Capital	Government Furnished Property
			(in millions)
1953	Boeing	152	$101
	Douglas	148	77
	Fairchild	214	26
	Grumman	240	25
	Lockheed	239	84
1954	Martin	81	38
	North American	802	92

THE AIRCRAFT industry is taking its lumps from three Congressional committees these days. The figures above illustrate what leading "antiprofiteering" legislators are telling their fellow members on Capitol Hill.

Rep. Carl Vinson (D., Ga.), chairman, House Armed Services Committee, indicated that profits of the aircraft industry are "unconscionable" by this measuring stick. He testified before the House Ways & Means Committee, holding hearings on the administration's request to extend the Renegotiation Act for 27 months after it expires June 30.

Barron Grief of the Aircraft Industries Association replied to Representative Vinson: Profit on defense contracts is being predetermined by the Renegotiation Board. To prove his case, Mr. Grief reported Boeing's ratio of earnings to sales before federal income taxes changed only 0.01 per cent from 1952 to 1954 after renegotiation. Before renegotiation, the fluctuation was a decline of 0.54 per cent from 1952 to 1953.

Rep. Thomas Curtis (R., Mo.) told the committee that the industry has no chance to build up its capital contribution as long as the board refuses to allow greater profits.

Prewitt Complains of Subcontracting

The Government Procurement Subcommittee of Sen. George Smathers (D., Fla.) has finished hearing small firms complain of their inability to gain major component subcontracts from the big missile primes.

A smaller member of the industry took on his big brother before the Smathers' committee: "The weapon system concept has been troublesome and discouraging to small business concerns such as mine," charges Richard Prewitt, president, Prewitt Aircraft Co. He thinks "increased costs, duplication of effort and equipment, and increased delivery time" result when the big primes get the right to control all the funds for a project.

Hokanson Cites Case History

Rep. F. Edward Hebert's (D., La.) Special Investigations Subcommittee is checking the value to the defense effort of the weapon system concept (principally the Air Force's mode of giving the complete contract for an advanced weapon to one contractor or a group of "associate" contractors).

Most damning was this step-by-step recital by Carl Hokanson, a small air conditioning manufacturer: 1. A big prime requested a quote on Mar. 1, 1956, for a special air conditioner for military aircraft. 2. On Mar. 15, the firm returned its quote with a complete design concept and cost breakdown. 3. A purchase order was received May 1. 4. The first unit was delivered Sept. 19. 5. After learning the unit was to be redesigned, Mr. Hokanson requested the opportunity to bid on the new specifications early in 1958. 6. In the summer, the company learned the prime was going to build its own air conditioners. 7. Late in the year it heard the new units were not meeting Air Force performance expectations. 8. In February, 1959, the same prime asked for quotes on five more air conditioners. 9. Mr. Hokanson submitted quotes and an engineering concept again in March. 10. Knowing that 70 units were to be built, he asked if he would get the order for the other 65. The company's reply, in Mr. Hokanson's words: "Only five would be purchased. Two would meet an emergency requirement of the Air Force. Three would be used as samples for the company's own production department in building the balance of their requirement."

Renegotiation Is the Key

Testimony like that forces Congress to hold on to the Renegotiation Act despite strong views of nonaircraft manufacturing firms, represented by the Machinery & Allied Products Institute. Without consideration of the facts of the aircraft industry's case, it is sad but true that all industry is, in a sense, being made to pay for the aircraft companies' high percentage of government furnished property.

Gabriel Starts Rocket Fuel Plant

Gabriel Sees Auto Market Growth

Gabriel Sells Ward Auto Products Div.

HEADLINES like those in the industrial press show that Gabriel Co., Cleveland, is going through the bittersweet process of changing its corporate personality.

The established maker of shock absorbers for the auto industry has some young ideas about diversifying for the growth opportunities of the scientific sixties.

• Gabriel is no longer tied to the fortunes of one market.

Years of experience in producing direct acting automobile shock absorbers taught the company that: Long run consumer demand makes the production of basic auto components profitable if you stay on top. But the feast and famine cycle of the car captive is too much like living on a roller coaster. As late as 1957, Gabriel derived 90 per cent of its sales from autodom. Its first big steps out of this market brought its sales dependence on cars down to 70 per cent in 1958. This year, going full tilt into rocket technology, the firm hopes to have a 50-50 split in income from auto and nonauto markets.

• Its key move was getting into electronics.

Gabriel's fortunes stood at low ebb in the early 1940s, until President John H. Briggs undertook the company's initial mixing of product lines with the acquisition of a flexible metal hose and coupling facility and another plant to produce automotive, and later television, antennas. The product base was broadened even more in 1951 when the firm bought a producer of piston rings and auto heaters; but the annual report still reflected rain or shine in autodom. The shape of things to come was decided the same year when Gabriel acquired Workshop Associates, Needham Heights, Mass., an engineering and production company, a war-born electronics firm.

As the electronics division of Gabriel, the Needham plant has grown from a marginal producer of high frequency antennas to a major supplier of parabolic microwave antennas for television, FM radio, continental radar defense network, and missile tracking.

• The step from electronics to aircraft-missiles came next.

After buying the Bohanan Mfg. Co., Los Angeles, in January, 1958, Gabriel moved the new division to Compton, Calif., and began building aircraft release devices for bombs, missiles, and fuel tanks. With encouraging backlogs mounting in the aircraft and electronics plants, Gabriel acquired the Talco Engineering Co., Mesa, Ariz., a designer and producer of solid fueled, moderate thrust rockets and ballistic devices.

Gabriel is starting a new subsidiary, Rocket Power Inc., next door to the Talco plant, to produce solid propellents for its rockets.

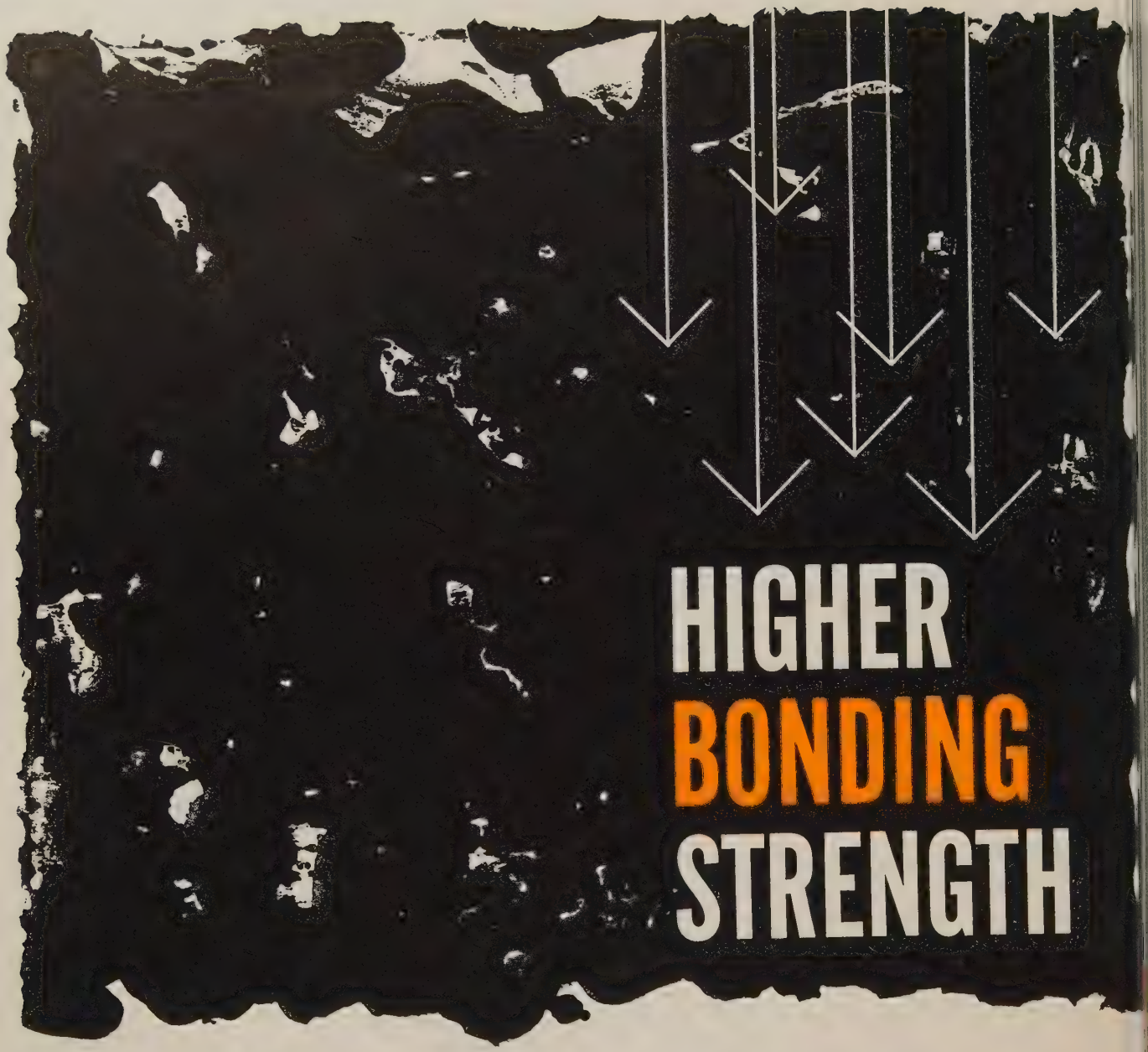
Gabriel is not as far out of its realm as it appears. It can oversee the space and missile work of its divisions as mainly extended applications of hydraulics and piston type thrusters.

Bohanan produces cartridge operated, quick disconnect systems; Talco makes ballistic pilot ejection devices (as in North American's X-15 rocket plane), and other equipment requiring emergency explosive power. Although both branches are heavily dependent on defense business, commercial applications are in the works. Talco, for example, is a pioneer in explosive forming of metals, a process with great commercial potential.

• "Digestion" and soul searching will decide the future.

"We think we're in a position of growth and profit potential in every part of the business," says Robert T. Hood, vice president and treasurer. "We have achieved the primary purpose of lessening our dependence on the auto industry, but have retained all that's good in the car business." Will there be more acquisitions, more diversification? "We're still digesting these, and are not looking at anyone at present. But we do expect growth in the present product picture."

The new divisions are already adding a healthy glow to Gabriel's prospects. Order backlogs are well above last year's. Sales in the first quarter, normally the lowest of the year, jumped from $4.3 million (in 1958) to $6.7 million; earnings rose from $16,040 to $224,850.



HIGHER BONDING STRENGTH

WITH KAISER BASIC BRICK FOR THE STEEL INDUSTRY

Exceptionally high strength at critical intermediate temperatures (1400°F to 1850°F) . . . that's the unique advantage you get with Kaiser unburned brick!

When the internal temperature of bricks in a furnace structure reaches the point where the chemical bond is destroyed, brick strength reaches its lowest point and cracking and spalling losses may result. In the chart, note the high crushing strength after firing in the intermediate range. This denotes strong bond at all temperatures — a unique feature of Kaiser unburned bricks.

The Difference: Solid State Reaction

With Kaiser brick, there is no "liquid phase" in the formation of the ceramic bond. Kaiser's use of volatized silica (particles as fine as cigarette smoke) promotes a **solid state reaction** at lower temperatures which starts to form the ceramic bond **before** the chemical bond burns out. Result: **higher** bonding strength, **higher** resistance to thermal shock and mechanical abuse in furnace charging.

Solid state reaction also gives Kaiser brick outstanding resistance to distortion and shrinkage. Excellent resistance to chemical attack by furnace fumes, iron oxides and slags is assured by high MgO content, maximum brick density and chemically stable composition.

Make your own comparison tests and see how much more performance you get with Kaiser Basic Brick. And ask to see the new 30-minute color movie "Progress In Modern Basic Refractories." Your Kaiser Chemicals Sales Engineer or Regional Office will be glad to make the arrangements.

Call or write Kaiser Chemicals Division, Dept S9232, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:

PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

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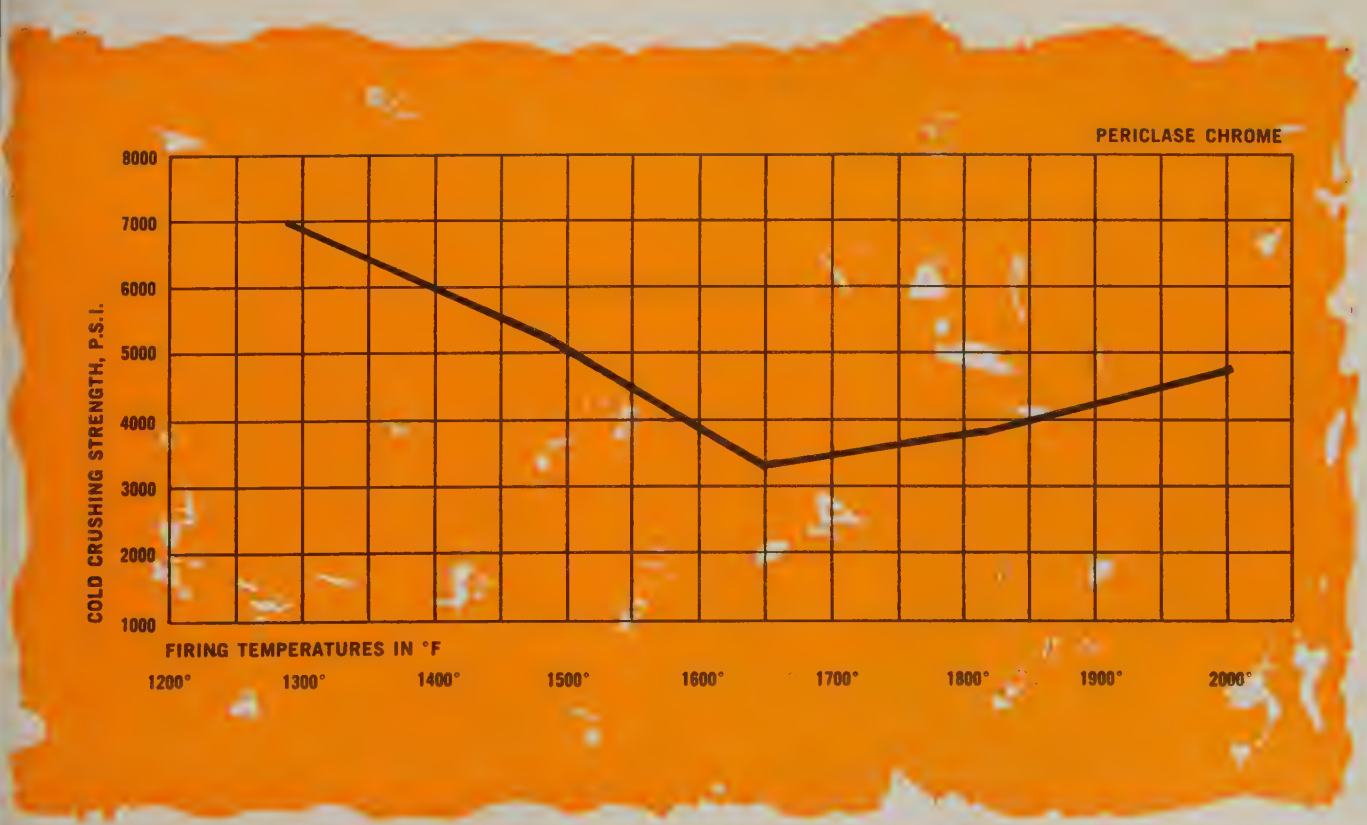


How to

FATIGUE

Few men suffer physical fatigue in industry today. But, psychological fatigue has taken its place. It can—and does—slash productivity just as much, psychologists report. Management hasn't learned how to overcome it. Result: Millions of dollars go down the inefficiency drain. Needed: Concentration by industry on "people research."

POOR VISIBILITY

If your lighting system is five years old, chances are it's obsolete. By upgrading it, you may easily boost worker efficiency 5 per cent or more. And you'll probably curtail accidents, slash reject volume, heighten morale, and improve your plant's appearance. New installations frequently pay for themselves in a year or less.

BOREDOM

The man on the left has the most common ailment in industry today. Psychologists say he's "suffering from a degree of indifference to the assigned task." That means he works because he has to, not because he wants to. How do you get him to want to? Several approaches have been tried successfully (see right), but much research in this field is still needed.

Combat These Productivity Killers

'LESS THAN 1 per cent of the federal government's research and development money goes into research on people. And the government is at least ten years ahead of industry."

That's how Dr. Erwin K. Taylor of Personnel Research & Development Corp., Cleveland management consulting firm, points up the desperate need for industry to take a closer look at the makeup of its employees.

"Companies put millions of dollars into designing better processes but seldom put any money into research on motivating employees to get the most out of those processes," declares Dr. Taylor.

• Fatigue is probably the biggest hole in industry's productivity basin.

Mechanization has virtually rid industry of physical fatigue. But a psychological brand that's even harder to conquer has taken its place.

The odds are that most of your production workers are bored with their jobs. Result: Below par productivity. What can you do?

"There are no sure answers," says Dr. Taylor. "Not enough research has been done in the field." But he suggests five approaches that can take you a long way toward a solution:

• The first line supervisor can often identify the causes of employee fatigue.

He alone is close enough to the situation. But often management places much more emphasis on a foreman's knowledge of the operations performed in his department than on his ability to motivate workers. Says Dr. Taylor: Foremen need sensitivity training in the understanding of people more than they do in the job mechanics phase if they are to be of top caliber. Management often becomes so production-oriented that it forgets production depends on people. Many supervisors can only spend about 10 per cent of their time on the motivational aspects of their jobs, says Dr. Taylor. Raising the percentage can hike productivity.

• Good selection and placement procedures, judiciously used, can prevent boredom.

Companies often hire people who are overqualified for the jobs assigned them. Result: With no challenge, they become bored and quit, or their productivity declines. A telephone company study of switchboard operators disclosed that the girls who learned fastest left soonest. Dr. Taylor says over 75 per cent of employee turnover results from placing overqualified workers on routine jobs. "For a job that makes few demands, you need a person who indulges in a great deal of reverie and fantasy," he reports.

• Another solution: Give employees more short range goals.

A Detroit Edison Co. experiment proves that point. The job: Sorting bills. The old method: Several thousand bills were dumped on a worker's desk at one time. Low productivity and many errors resulted. The new method: Only a few hundred bills are deposited each time. Result: Higher productivity and few mistakes. Reason: "The employee is given a goal he's sure he can reach. He was overwhelmed by the task the old way," reports Dr. Taylor.

The same held true on another operation. The job: Assembling heaters. The old method: The worker put completed heaters on a conveyor which carried them out of his sight. New method: Completed heaters are stacked where the worker sees tangible evidence of his efforts.

• Industry needs professionally trained personnel men.

"One of industry's big problems is that managers are poorly trained in the motivation of people," asserts Dr. Taylor. "The human being is much more complex than most highly automated lines. But, while only highly skilled and fully trained men are permitted to handle the line, totally untrained men often handle the people," he says. That results in poor selection, placement, and motivation, he believes.

"A set percentage of your company's R&D budget should go for 'people research,'" believes Dr. Taylor. It should be done by specialists who are counterparts of your physicists and research engineers, he says.

• Nonmonetary incentives sometimes overcome job dissatisfaction and psychological fatigue.

Music systems, coffee breaks, properly timed rest periods, and other such benefits usually result in higher productivity. "But be careful," warns Dr. Taylor. "Examine the costs and consequences of any such measures before you proceed."

• Music can relieve worker tension.

"Our installation has been effective in the field of employee morale . . . has increased production . . . reduced fatigue among our operators," reports C. L. Saxe, president, Thermo Products Inc., Albany, N. Y.

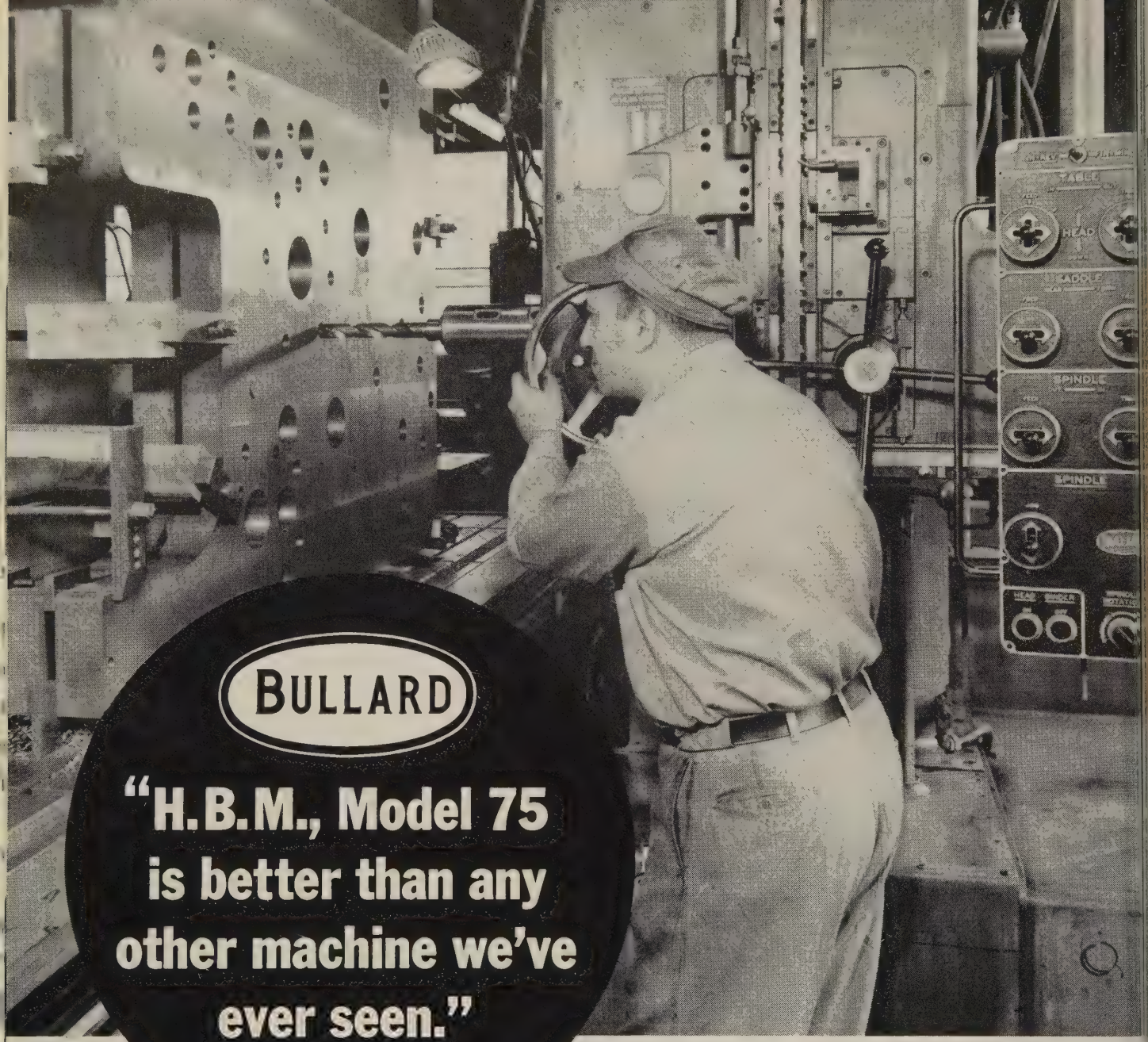
At Lever Bros. Co., New York, typing errors were reduced 38.6 per cent after a music system was installed. Productivity among IBM key punch operators climbed 18.6 per cent at Mississippi Power & Light Co., Jackson, Miss.

Other benefits attributed to music: 1. Drafting room productivity increased 20 per cent at Fischer Lime & Cement Co., Memphis, Tenn. 2. Clerical absences dropped 5 per cent at National Gypsum Co., Buffalo.

• Adequate lighting is essential to good productivity.

Lighting can be an important production tool. Erickson Tool Co., Cleveland, hiked worker efficiency 10 per cent, cut minor accidents in half, and decreased rejects about 5 per cent in one department, more than 10 per cent in another—all as the result of a new lighting system.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



BULLARD

"H.B.M., Model 75 is better than any other machine we've ever seen."

This statement by Mr. John Gruber, Plant Foreman of George Hantscho and Company, Inc., Mount Vernon, New York, manufacturers of printing equipment, sums up their experience since installing the Bullard 4″ H.B.M., Model 75, in June 19

He further states "our presses and paperfolding machines are made to order and each job varies from the one before it. Because of this, we can't use assembly line or mass production techniques."

"The only mass production we have is the machining of holes in cast iron, up to as many as 105 in a side frame. Since we've been using our Bullard H.B.M., Model 75, with BULLARD AUTOMATIC POSITIONING we have not spoiled a single piece due to the malfunctioning of the machine."

Do you know the full story on the Bullard H.B.M., Model 75? If not, it will pay you to call your nearest Bullard Sales Engineer — he'll be glad to give you all the details or writ

THE BULLARD COMPANY BRIDGEPORT 9, CON

Why GM Reorganizes Central Foundry

Autodom wonders whether the consolidation of General Motors Corp.'s Central Foundry and Fabricast divisions means the company is deviating from its decentralization philosophy. The answer is no. The biggest reason for the move is to combine Central's casting experience with Fabricast's aluminum knowhow as GM seeks more uses for the light metal. Central's general manager, James H. Smith, right, will head the combined operation.

GENERAL MOTORS CORP. has integrated its Fabricast Div. into Central Foundry Div., Saginaw, Mich. The merger, unusual under GM's decentralization philosophy, places iron and aluminum casting facilities under a single head. It has also given rise to speculation in autodom's metalworking quarters as to why the move was made and whether it will be followed by more unification.

• **Why**—Referring to the consolidation, John Gordon, GM's president, says: "These two divisions are being consolidated to capitalize to the fullest on their facilities and organization in the fields of cast iron and aluminum." Detroit takes that to mean GM plans to use more aluminum and, to do so, it expects to make use of gray iron experience and facilities. Four bits of information lead to this conclusion.

1. Important to Central Foundry is the fact that, since 1950, the corporation has been operating a molten metal pilot plant at Fabricast's Jones Mills location, under an aluminum contract with Reynolds Metals Co., Richmond, Va. Experience gained there can be put to use by the Saginaw division, as well as give Central Foundry a predictable supply of molten metal for aluminum castings.

2. The company is well along in developing aluminum engines. One will be out this fall in Chevrolet's light car, the Corsair. A water cooled job is expected by 1962. In addition, the adoption of a transaxle by GM will call for a combined transmission-differential housing, probably of aluminum.

3. GM's Detroit Diesel Div. already has announced it can convert its machining and assembly lines to handle gray iron or aluminum. Metalmen suspect the same switch could be made by other divisions.

4. In what may turn out to be one of 1958's most important speeches to foundrymen, Dr. Robert F. Thomson and Darl F. Caris laid out GM's future position when they told the Gray Iron Founders' Society that industry must find ways to improve gray iron castings, to diversify, or include aluminum casting facilities in their foundries. By consolidating Fabricast and Central Foundry, GM is taking a page from its own book.

Putting those tidbits together,

Plants	Typical Operations
Saginaw, Mich.	Malleable iron wheel hubs, differential carriers, spring hangers.
	Pearlitic malleable rocker-arms, crankshafts, transmission parts, diesel pistons.
Danville, Ill.	Gray iron brake cylinders, electric motor frames, pump housings, manifolds, and transmission cases.
	Malleable iron pulleys, brake shoes, door hinges.
Defiance, Ohio	Gray iron blocks and heads, flywheel housings and flywheels, camshafts, bearing caps, and transmission cases.
Bedford, Ind. (Fabricast)	Castings (aluminum die-castings; sand, permanent and semipermanent mold, and shell) for automotive and appliance parts. Over 100 products.
	Heat resistant aluminum alloy investment castings for gas turbine parts.
Jones Mills, Ark. (Fabricast)	Some 15 to 20 aluminum die and permanent mold castings for automotive use. Operates under molten metal contract with Reynolds Metals Co.

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Detroit won't be surprised to see Central Foundry casting aluminum blocks for B-O-P cars. Initially, it may use some of its own aluminum casting facilities. Ultimately, it will probably make use of Fabricast's diecasting knowhow and molten metal supply to turn out 65 lb aluminum castings.

• **Why Not** — Other less credible rumors stemming from the consolidation are that Brown-Lipe-Chapin Div., Syracuse, N. Y., will be added to Central Foundry, and that as GM standardizes more, it will tend to consolidate more of its manufacturing facilities.

Brown-Lipe-Chapin's casting facilities are devoted mainly to zinc diecasting. It also has stamping, plating, and anodizing lines, to make hub caps, wheel discs, bumper guards, grilles, and other decorative parts. There seems to be little reason to bring these facilities into Central Foundry's setup.

As for standardization, it's true that GM has combined three bodies into a single adaptable shell. It's expected to standardize more body components in the future. It's also reported that the corporation would like to use a single transaxle design for all car lines with the possible exception of Chevrolet. And it is likely that the first water cooled aluminum block will be used for several car lines.

• **Still Mixed**—This does not mean, however, that GM will consolidate all engine and transmission manufacturing into one or two plants. It has sizable investments in these divisional facilities. No matter how popular aluminum engines become, there will continue to be a demand for gray iron blocks for trucks and certain car lines. These engines are so different it's difficult to use a single block and almost impossible to standardize heads, valve train components, cams, and crankshafts. Car divisions already are slightly miffed at losing some of their autonomy in body designing. They'd be most unwilling to give up major components like engines.

Chrysler and GM Earnings

First quarter reports show Chrysler Corp. sales are 29 per cent ahead of those in the first three months of 1958. General Motors Corp. says sales are up 18 per cent from a year ago.

Chrysler earned $15.2 million ($1.75 a share) on sales of $691 million this first quarter vs. a $15.1 million loss during the like 1958 period. L. L. Colbert, president, reports the company has sold 218,114 vehicles vs. 185,888 units the year before. Quarterly capital expenditures amounted to $13 million, compared with $12 million spent last year.

GM's quarterly net income is $293 million on sales of $3.2 billion. Comparable figures for 1958 are $185 million earnings on $2.7 billion sales. The company's total vehicle sales from U. S. plants are 914,705 units vs. 780,941 last year. Worldwide sales of cars and trucks are 1.13 million vs. 981,963.

• **Chrysler Plans**—Continuing its overseas development (STEEL, May 4, p. 55), Lynn A. Townsend, Chrysler's group vice president, international operations, announces the company plans to build trucks in Argentina. The program, amounting to a $15 million investment, is a joint effort of Chrysler International S. A. and a distributor, Fevre y Bassett in San Justo.

The distributor has a 500,000 sq ft assembly plant with a 20,000 unit annual capacity. Chrysler plans to stock it with equipment and tooling, so that within four years the company will be able to produce 70 per cent of its truck parts locally.

• **GM Plans**—Fisher Body Div. announces expansion of its Lansing and Pontiac, Mich., plants. The Lansing programs call for a 380,000 sq ft addition to facilities used to assemble bodies for Oldsmobile, Chevrolet, and Pontiac convertibles. Employment is 5300. The job will be finished by September.

In Pontiac, Fisher will add 50,000 sq ft to its 1.35 million sq ft plant and rearrange equipment so all Pontiac body styles can be built in the plant. At present, convertible and station wagon bodies are built elsewhere. A new body shop and dual assembly line are part of the modernization.

U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,112
March	576,085	357,049
April	578,825†	316,503
4 Mo. Totals	2,179,151	1,555,179
May		349,474
June		337,355
July		321,053
August		180,324
September		130,426
October		261,696
November		514,099
December		593,920
Total		4,243,526

Week Ended	1959	1958
Apr. 4	133,878	64,318
Apr. 11	133,202	84,997
Apr. 18	135,934	73,219
Apr. 25	133,987	58,664
May 2	119,034†	78,434
May 9	125,000*	78,506

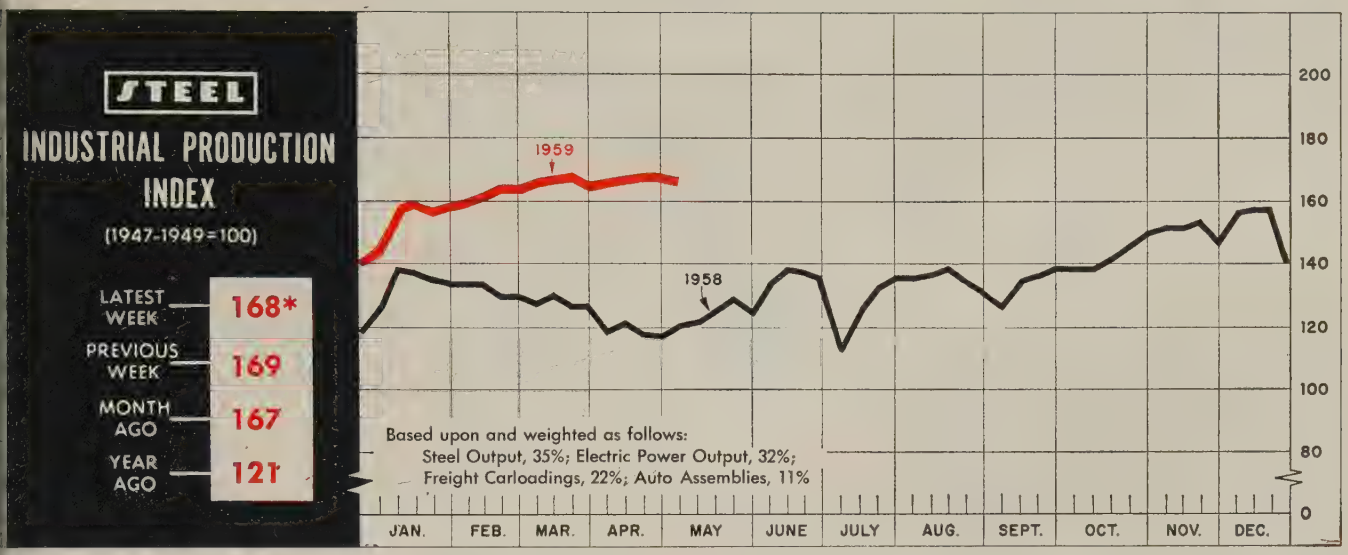
Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

NADA Gives Import Details

Big Three carmakers can breathe a bit easier now. One of the last worrisome theories about small car buying habits has been pretty well squashed by the National Automobile Dealers Association survey on import car buyers. The theory is that many of these import buyers would continue to want foreign cars even when U. S. small cars become available.

Paul E. Herzog, NADA research director, claims it isn't so. His survey indicates that 60 per cent of those persons who own imports wouldn't have bought them if similar domestic cars had been on the market. Not only that, but only 6 per cent of the persons questioned claimed they bought the imports mainly for prestige purposes. Most of those who did were in the less than $3000 income bracket. Mr. Herzog admits that this particular claim may be questionable since few will openly admit buying anything for prestige.

Other survey conclusions: 88 per cent of the import owners bought because the smaller cars are cheaper to operate. Only 47 per cent felt that a lower original price was the prime reason for purchasing, but 62 per cent claim that lower annual depreciation was an important factor influencing their decision to buy.



*Week ended May 20.

Construction Is Ahead of Schedule

CONSTRUCTION analysts are erasing their estimates for 1959 and sharpening their pencils to make new ones as this record breaking industry continues to set the pace for the general economy.

Both contract awards and work put in place are getting off to a faster start than experts had anticipated. In the first four months of this year, construction put in place ran 13 per cent ahead of the corresponding period of 1958, latest government figures show. Contract awards, many of which are not reflected in construction activity until several months later, are doing even better. They were 18 per cent higher in the first quarter than they were in last year's first period, says F. W. Dodge Corp.

• **Slowing Down?** — Government figures hint that work put in place is beginning to slow down. Seasonally adjusted, the annual rate of total construction activity in the first four months is: January, $54.468 billion; February, $54.444 billion; March, $54.528 billion; and April, $53.940 billion. Those figures compare with the 1958 estimated total of $48.115 billion and the government's forecast of $52.3 billion for this year. Even if some softness does develop later this year, it appears now that the forecast is going to be short.

Despite the slight downturn, the April total of $4.2 billion for work put in place was a record for that month. Both public and private construction showed significant upturns from March's figures, with residential building leading the way. Industrial building continued weak, but this is a reflection of the recession. (The leadtime between the award of a contract and work in this category is considerably longer than it is in lighter construction.)

• **Bases for Strength**—There are several reasons for believing that the forecasts will be exceeded.

First, a lot of momentum was

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,668[1]	2,627	1,334
Electric Power Distributed (million kw-hr)	12,600[1]	12,538	11,251
Bituminous Coal Output (1,000 tons)	8,025[1]	8,055	6,808
Crude Oil Production (daily avg—1,000 bbl)	7,130[1]	7,132	6,227
Construction Volume (*ENR*—millions)	$410.9	$314.3	$485.6
Auto, Truck Output, U. S., Canada (*Ward's*)	155,210[1]	171,280	105,776
TRADE			
Freight Carloadings (1,000 Cars)	650[1]	647	533
Business Failures (Dun & Bradstreet)	300	304	329
Currency in Circulation (millions)[3]	$31,244	$31,332	$30,518
Dept. Store Sales (changes from year ago)[3]	+4%	+6%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$24,700	$25,724	$24,019
Federal Gross Debt (billions)	$285.6	$285.6	$275.1
Bond Volume, NYSE (millions)	$29.6	$30.2	$26.4
Stocks Sales, NYSE (thousands of shares)	17,776	17,788	12,434
Loans and Investments (billions)[4]	$94.9	$95.5	$92.1
U. S. Govt. Obligations Held (billions)[4]	$29.6	$30.1	$30.1
PRICES			
STEEL's Finished Steel Price Index[5]	247 82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	220.7	220.6	196.9
All Commodities[7]	119.8	119.9	119.3
Commodities Other than Farm & Foods[7]	128.0	128.1	125.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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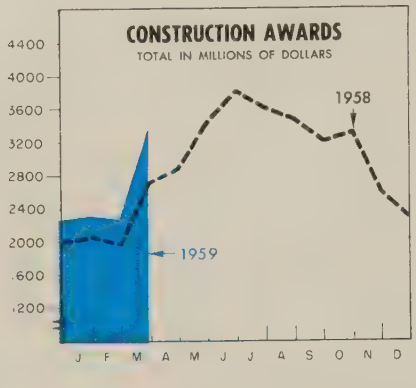
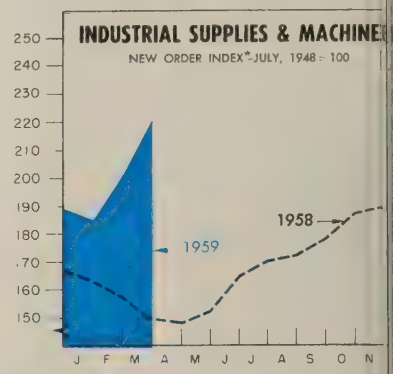
THE BUSINESS TREND





	Total 1959	Total 1958	Building 1959	Building 1958
Jan.	2,319.2	2,060.0	1,839.7	1,530.2
Feb.	2,307.0	1,953.4	1,777.4	1,478.1
Mar.	3.339.9	2,721.2	2,453.9	2,037.7
Apr.	.....	2,881.0	.....	2,198.0
May	.....	3,402.6	.....	2,470.3
June	.....	3,819.6	.....	2,340.3
July	.....	3,607.1	.....	2,633.5
Aug.	.....	3,466.6	.....	2,529.5
Sept.	.....	3,215.9	.....	2,352.5
Oct.	.....	3,309.0	.....	2,549.8
Nov.	.....	2,593.9	.....	1,980.8
Dec.	.....	2,281.9	.....	1,728.6
Totals	.....	35,312.2	.....	25,829.3

F. W. Dodge Corp.
Charts copyright, 1959, STEEL.

(Seasonally adjusted)	1959	1958	1957	B
Jan.	186	163	221	
Feb.	202	157	219	
Mar.	221	149	210	
Apr.	...	148	203	
May	...	152	199	
June	...	164	199	
July	...	170	197	
Aug.	...	172	197	
Sept.	...	178	203	
Oct.	...	187	192	
Nov.	...	189	180	
Dec.	...	190	167	

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' As

picked up in building during the first four months of the year. The difference between cumulative totals for 1959 vs. 1958 is too great to be accounted for by the recession. (Construction dipped in early 1958 but not nearly as much as the general economy did.)

Second, contract awards are maintaining the high level established late in 1958, assuring the industry of a sufficient backlog to keep it busy for several months even if contracts begin to dip later this year. (See graph above.)

Third, housing starts have shown only the slightest signs of declining. During the first quarter, the annual rate was well above 1.3 million. F. W. Dodge revised its original estimate of this year's market from 1.2 million to 1.3 million starts.

Fourth, industrial construction is finally beginning to accelerate from its recession low. One of the impressive features of the weekly contract reports from *Engineering News-Record* has been the steady improvement in this segment. Total value for the first four months is 27 per cent ahead of the corresponding figure for 1958. The backlog of fabricated structural steel orders has been increasing since the first of the year.

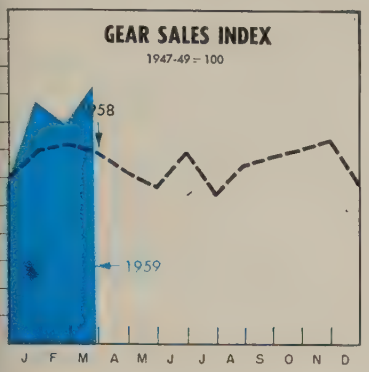
H. C. Turner Jr., president of Turner Construction Co., New York, points out that this upturn may not have much influence on work put in place in 1959, but it should put some backbone into 1960 work. "Another thing to keep in mind is that much of your capital expenditures this year are going into modernization, not new construction. However, industrial building plans may pick up before the year is over—maybe in the last quarter."

• **Costs Going Up**—While building costs have held fairly stable for the last few months, there is much doubt that they can resist the upward movement for long. F. W. Dodge figures building costs have gone up only 1 per cent in the last six months, but they will edge up another 4 per cent in the next year.

"The 1941 building dollar is now worth 39 cents," says a Dodge official. "That means the buyer must put up $2.56 to do the work $1 did before. Twelve months from now the buyer will have to increase the amount to $2.66."

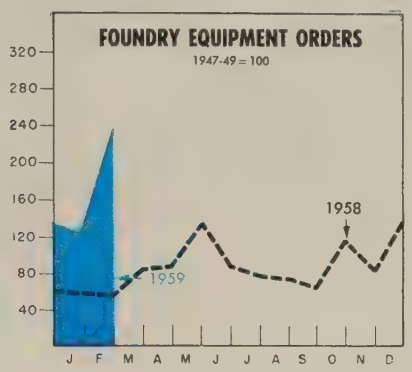
Stocks Build Up Slowly

Inventory buildup has been less than some economists expected. Since the low point was reached



	1959	1958	1957	1956
Jan.	218.6	174.5	259.3	245.5
Feb.	199.9	179.1	239.5	256.2
Mar.	234.3	173.7	262.4	276.5
Apr.	....	153.2	221.7	264.7
May	....	142.2	263.2	275.6
June	....	173.8	215.9	245.4
July	....	133.3	211.4	286.7
Aug.	....	162.1	225.8	219.5
Sept.	....	170.7	174.9	230.5
Oct.	....	175.9	207.0	299.8
Nov.	....	182.7	165.3	216.2
Dec.	....	145.5	150.8	235.7
Avg	....	163.9	216.4	254.4

American Gear Mfrs. Assn.



	1959	1958	1957
Jan.	127.4	57.9	117.9
Feb.	237.1	57.6	188.4
Mar.	....	85.9	127.0
Apr.	....	88.7	101.1
May	....	136.1	136.2
June	....	87.7	187.5
July	....	77.9	98.6
Aug.	....	74.1	231.3
Sept.	....	64.5	113.9
Oct.	....	118.9	145.3
Nov.	....	83.3	59.6
Dec.	....	137.0	61.4
Avg	....	89.1	130.7

Foundry Equipment Mfrs. Assn.

last December, manufacturers have added only $1.1 billion to stocks (seasonally adjusted) through March, show the latest Commerce Department figures. Most of the addition (about $900 million) has been in durable goods industries.

Reason: During the same period, manufacturers increased shipments by about $1 billion and upped their rate of new orders by $1.6 billion. So they are using up materials nearly as fast as they can get them.

The big change in inventories is expected to come during the second quarter as steel, copper, aluminum, and other nonferrous metals users lay in stocks for an uncertain third quarter. But with new orders coming in at such a rapid rate, it is doubtful that the stock buildup will be much out of proportion to requirements.

Index Levels Near Record

STEEL's industrial producton index is maintaining its high level, but it isn't making any headway recordwise. At a preliminary 168 1947-49 = 100) for the week ended May 2, it is 1 point under the record. During the last nine weeks, the index has fluctuated within a range of only 3 points.

Steel production has about hit its ceiling for the first half. At 94.5 cent of capacity, output was scheduled at close to 2,676,000 net tons for ingots and castings in the week ended May 10.

Auto output was cut back sharply during the last week in April as General Motors Corp. closed some facilities for spring inventory. This will be the pattern for the next few weeks, although over-all production will remain well over the 500,000-unit-a-month rate. (*Ward's Automotive Reports* says the current rate of production projects to about 6 million units for 1959.)

Output of electricity is at the turning point between the late winter dip and the spring upturn. The improvement will be small for a while, but at about 12.6 billion kw-hr a week, the industry is surpassing the corresponding 1958 figures by about 11 or 12 per cent.

The big plus in the immediate future will be in freight carloadings. Strength will come from three sources: Iron ore loadings, coal shipments, and miscellaneous freight. If the other three elements in the index do no worse than hold at present levels, carloadings may move the index up a notch or two by July 1.

W. C. "BILL" PINE, Hayes Chief Metallurgist, reports . . .

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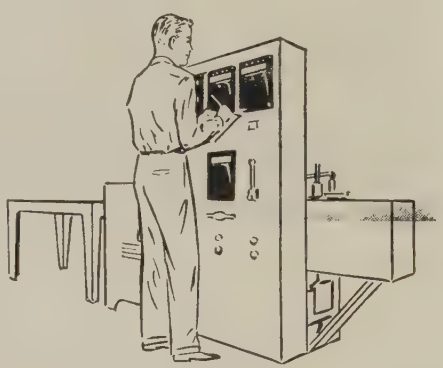

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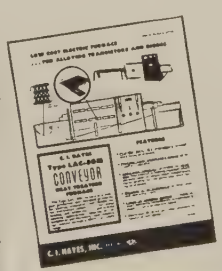

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SPEED GRIPS snap into place . . . some into panel holes . . . others over panel edges. No special tools or skills required. Spring-steel fingers grip the panel, yet let the nut float to compensate for normal panel-hole misalignment. Welding, staking and clinching are eliminated. SPEED GRIPS can even be applied after panels have been finished, avoiding paint-clogged threads.

SPEED GRIPS are available in a wide range of sizes and types, including front-mounting nut and bolt retainers for hard-to-reach or blind locations.

See your Sweet's Product Design File, section 8-T for data on these and other SPEED NUT Brand Fasteners. Your Tinnerman representative has complete information and samples. If he isn't listed under "Fasteners" in your Yellow Pages, write to:

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F. W. LAVERTY
Clark Bros. president

JOSEPH E. ADAMS
White Motor executive post

CECIL HEILMAN
Diebold mfg. v.p.

J. M. OLESEN
Lyon Metals exec. v.p.

F. W. Laverty was appointed president of **Clark Bros. Co.**, Olean, N. Y. He was executive vice president. He succeeds **J. N. MacKendrick**, now chairman, replacing **C. Paul Clark**, who was made honorary chairman.

William Hallam was made sales manager, **National Electric Div.**, Pittsburgh, H. K. Porter Company Inc. He was St. Paul district sales manager.

R. W. Burgeson was elected president, **Hoefer Mfg. Co.**, Freeport, Ill., succeeding **G. F. Oliver**, now chairman.

William E. Hunter was made general sales manager, Gonset Div., **Young Spring & Wire Corp.**, Burbank, Calif.

B. R. McBath was made general manager of **Worthington Corp.'s** Plainfield, N. J., Div., responsible for engineering, manufacturing, and sales. He succeeds **K. W. Horsman**, resigned. **Joseph Goldsten** was made manager of engineering for the division to succeed **W. L. Gaya**, assigned to the headquarters engineering staff at Harrison, N. J. **Charles D. Wood** was made district office manager at Boston for Worthington to succeed **Richard M. Cleveland**, retired.

Robert W. Ross was made Great Lakes regional sales manager for **Standard Conveyor Co.**, St. Paul.

Joseph A. Rzezutko was made production manager, Detroit plant, **American Metal Products Co.**

Joseph E. Adams was appointed to the new post of executive vice president-manufacturing and development at **White Motor Co.**, Cleveland. He was vice president-manufacturing.

Cecil Heilman was elected vice president - manufacturing, **Diebold Inc.**, Canton, Ohio. He was works manager of the Canton plants. He now directs manufacturing at Diebold's Canton and Malvern, Ohio, plants; at Record Files Inc., and K. F. Cline, Dickson, Tenn., both subsidiaries; and at Diebold of Canada Ltd., Toronto, Ont.

Donald F. Brookland was elected vice president for alloys, **Tennessee Products & Chemical Corp.**, Nashville, Tenn., subsidiary of Merritt-Chapman & Scott Corp. He succeeds **Marcus Evans**, transferred to an administrative post at Nashville. Mr. Brookland was vice president-operations, Keokuk Electro Metals.

A. T. Richter was promoted from Pittsburgh district sales manager to assistant general sales manager, **Midvale-Heppenstall Co.**, Philadelphia.

G. E. Steiner was appointed president, **M. C. Jones Electronics Co. Inc.**, Bristol, Conn., recently purchased by Bendix Aviation Corp. He was general manager of Bendix's Scintilla Div. **Stanley T. Urbank**, one of the founders of the Jones company and formerly chief executive officer, was named vice president-general manager. **M. C. Jones**, former president of the Jones firm, will act as a consultant.

J. M. Olesen was elected executive vice president, **Lyon Metal Products Inc.**, Aurora, Ill. He was vice president-sales.

Bridgeport Brass Co., Bridgeport, Conn., elected as vice presidents **Joseph P. McNamara** and **Frank J. Cunnane**. Mr. McNamara, formerly assistant secretary and counsel, is now vice president-personnel. Mr. Cunnane, manager of the Housatonic plant in Bridgeport, continues to head this facility as vice president and plant manager.

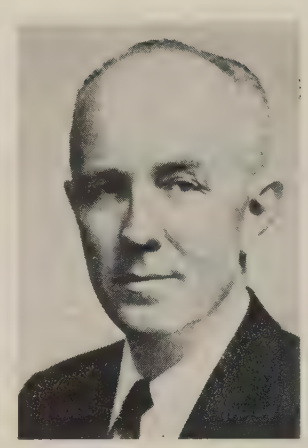
Sidney Metzger joined the manufacturing staff of **Brush Beryllium Co.** at Elmore, Ohio, as rolling mill superintendent, Alloy Div. For the last nine years, he has been process engineer with W. B. Driver Co., Newark, N. J.

Ernest E. Swartswelter was elected vice chairman of **Blaw-Knox Co.**, Pittsburgh. He was chairman of Aetna-Standard Engineering Co., recently acquired by Blaw-Knox.

Lawrence B. Raskin was promoted from vice president to president of **Toledo Pickling & Steel Service Inc.**, Toledo, Ohio. **Harold Osburn** was named vice president.

Chain Belt Co. appointed **Roland V. Poisson** Chicago district sales manager. Former sales manager for the company's Roller Chain Div. at Springfield, Mass., he is succeeded by **Joseph W. Cox. William E. Kennedy** succeeds Mr. Cox as sprocket sales manager, Worcester, Mass., plant. Mr. Poisson succeeds **G. A. Gunther**, who assumes the

EDWARD McL. TITTMANN



ROBERT D. BRADFORD

Asarco executive vice presidents

FRANK PACE JR.

EARL D. JOHNSON

General Dynamics chairman and president

new post of special account executive in the Chicago area.

Edward McL. Tittmann and **Robert D. Bradford** were elected executive vice presidents, **American Smelting & Refining Co.**, New York. **Charles F. Barber** and **Forrest G. Hamrick** were elected vice presidents. Mr. Bradford is president of Lake Asbestos of Quebec Ltd., subsidiary, and is in charge of the company's Federated Metals Div. Mr. Tittmann is chairman of Southern Peru Copper Corp., owned by Asarco.

J. Douglas Darby was appointed vice president and assistant to the president, **United States Steel Corp.**, Pittsburgh. He was an administrative vice president-commercial.

Ralph A. Castillo was appointed general manager of **Joseph T. Ryerson & Son Inc.** at Houston. He has been serving as Houston branch manager, a position he occupied with Vinson Steel & Aluminum Co., from which Ryerson acquired the plant last December.

Earl D. Johnson was elected president, **General Dynamics Corp.**, New York. Former executive vice president, he succeeds **Frank Pace Jr.**, who was elected chairman, and remains chief executive officer. **Carleton Shugg**, general manager, **Electric Boat Div.**, Groton, Conn., and a senior vice president of the corporation, was promoted to president of the division. **Dr. Frederic de Hoffmann**, general manager, **General Atomic Div.**, San Diego, Calif., and a corporation vice president, was promoted to president of the division and a senior vice president of the corporation. **C. Rhoades MacBride**, General Dynamics' vice president - operations, was made senior vice president-operations.

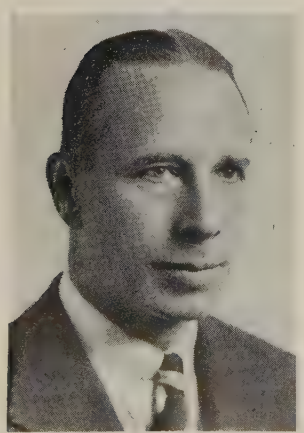
Gerard F. Hart succeeds **Thorning Wood**, retired, as secretary of **Gifford-Wood Co.**, Hudson, N. Y.

Gardner D. Carpenter joined **McLaughlin Co.**, Birmingham, Mich., as chief engineer. He was with Mt. Clemens Metal Products Co., and has been in fastening engineering for over 20 years. Previous assignments were with Ford Motor Co., Fisher Body Div. of General Motors Corp., and Chrysler Corp.

Tedford M. Hendrickson was named power engineer for **Youngstown Sheet & Tube Co.**, Youngstown, succeeding **Paul R. Duffey**, retired. **Robert F. Doolittle** was elected general counsel and secretary to succeed **Judge James E. Bennett**, retired. **William J. Harnisch** was elected assistant secretary.

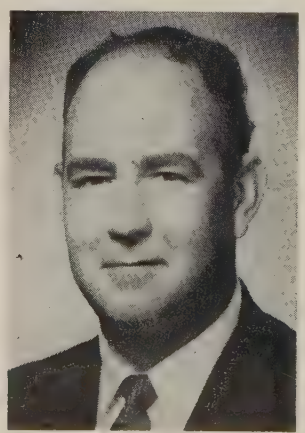
Fred D. Brown was made marketing manager for **Westinghouse Electric Corp.'s** Arc Welding Dept. He is at the department's main plant in Buffalo. He was manager of the corporation's Nuclear Ship Section, a special group responsible for liaison between all Westinghouse divisions and the staff of Adm. H. G. Rickover.

Lee D. Nutter was named vice president-marketing, **Holly-General Co.**, division of Siegler Corp., Anaheim, Calif. He had been with General



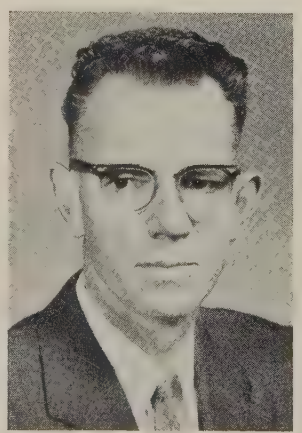
J. DOUGLAS DARBY

U. S. Steel post



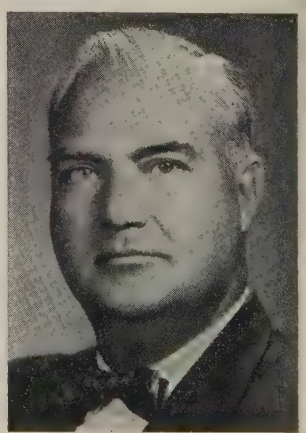
RALPH A. CASTILLO

Ryerson gen. mgr.



GARDNER D. CARPENTER

joins McLaughlin Co.



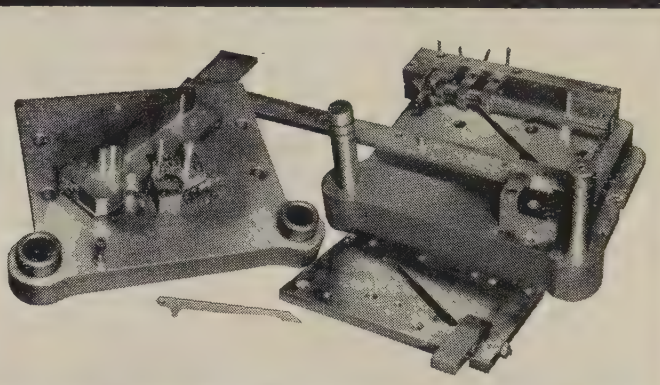
LEE D. NUTTER

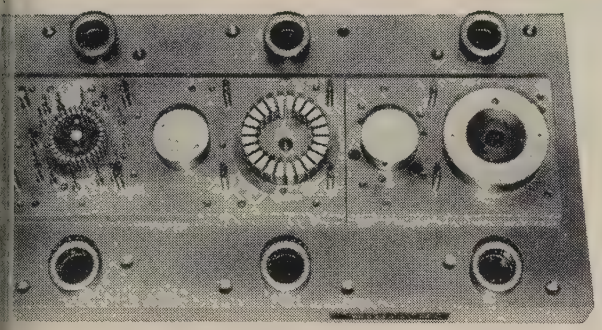
Holly-General v.p.

the names that stand for **production**

in the metal-working centers of America

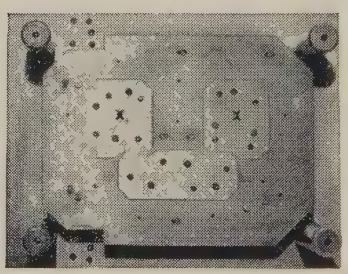
air hard

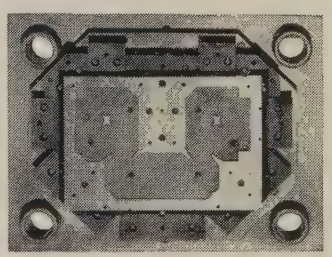




ohio die

crocar





These are the most profitable cold work die steels at the disposal of the diemaker today, in down-to-earth *performance per dollar per pound.* Each is an air-hardening grade, each has its unbeatable area of application. Only three names to remember —AIR HARD, OHIO DIE, CROCAR— and you've got it made! *Check us for the technical data you can use.*

V·A

VANADIUM-ALLOYS STEEL COMPANY

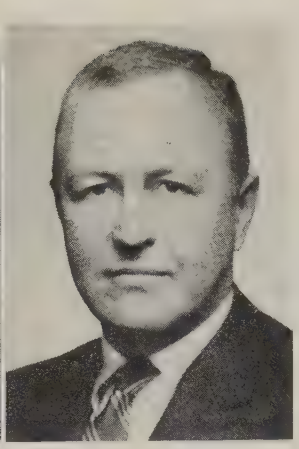
LATROBE, PENNSYLVANIA

DIVISIONS: Anchor Drawn Steel Co. • Colonial Steel Co. • Metal Forming Corporation • Pittsburgh Tool Steel Wire Co.

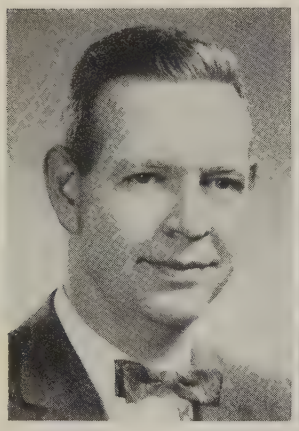
SUBSIDIARIES: Vanadium-Alloys Steel Canada Limited • Vanadium-Alloys Steel Societa Italiana Per Azioni • EUROPEAN ASSOCIATES: Societe Commentryenne Des Aciers Fins Vanadium-Alloys (France) • Nazionale Cogne Societa Italiana (Italy)

HARPER D. ROTH
Harper Electric Furnace v.p.

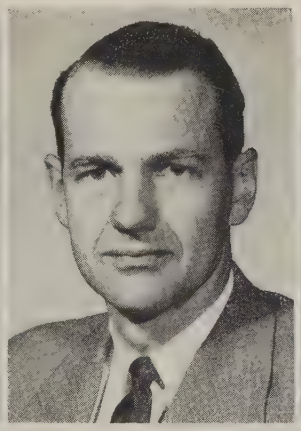
RICHARD G. WALSH
Titeflex eng.-director



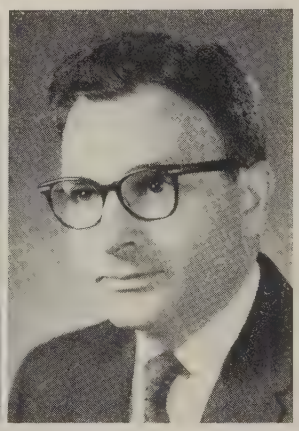
HERBERT A. BOAS JR.
Budd Co. v. p.



AUGUST SUNNEN
Sunnen Products Ltd. pres.



WILLIAM H. SMITH
Ford-Indianapolis post



GEORGE USTIN
Buchanan v.p.-eng.

Electric Co. for 22 years in a variety of executive sales positions.

August Sunnen succeeds his father, the late **Gus Sunnen**, as general manager of **Sunnen Products Ltd.**, Chatham, Ont. He was vice president of Ramsden Mfg. Ltd., a permanent mold aluminum foundry in London, Ont. He had previous association with Sunnen Products Co., St. Louis, parent firm.

William H. Smith was made plant manager for **Ford Motor Co.'s** Indianapolis steering gear and cold heading plant, Transmission & Chassis Div. He succeeds **R. T. Thornton**, now general manufacturing manager, Hardware & Accessories Div., Rawsonville, Mich. Mr. Smith was manufacturing manager at the Indianapoils plant.

Bernard A. Monaghan was elected president, **Vulcan Materials Co.**, Birmingham. Former executive vice president, he succeeds **Charles W. Ireland**, who was made chairman, a post formerly held by **A. C. Buttfield.**

George Ustin was named to the new post of vice president - engineering, **Buchanan Electrical Products Corp.**, Hillside, N. J., subsidiary of Elastic Stop Nut Corp. of America. He joined Buchanan five years ago. Previously he was general manager of the cord set plant of the Hatfield Wire & Cable Div., Continental Copper & Steel Industries.

Mel S. Nielsen was appointed western division manager, a new post, for **Truarc Retaining Rings Div.**, Waldes Kohinoor Inc., with headquarters in Los Angeles. In addition to over-all responsibility for the western territory, he will serve as Truarc sales engineer in southern California, Arizona, New Mexico, and parts of Nevada, succeeding **Ludwig L. Bluth**, retired. **Paul W. Vapnek** succeeds Mr. Nielsen as sales engineer in northern California, Washington, and Oregon, with headquarters in San Francisco.

Donald H. Parrish was made San Diego, Calif., works manager, **Stromberg - Carlson Div.**, General Dynamics Corp.

Harper D. Roth was elected vice president-marketing, **Harper Electric Furnace Corp.**, Buffalo. He was treasurer and is succeeded by **Warren J. Eberhardt**, former assistant treasurer.

Richard G. Walsh was appointed director of engineering, **Titeflex Inc.**, Springfield, Mass. He was manager of Engineering Test and Design Engineering Depts., Aircraft Engine Div., Ford Motor Co., in Chicago. Titeflex is a subsidiary of Atlas Corp.

Herbert A. Boas Jr. was elected a vice president of **Budd Co.**, Philadelphia. He joined the company in March of last year as director of marketing and was also named a member of the policy committee. He continues to serve in both capacities. Prior to joining Budd, he was with Sinclair Refining Co. and with Sinclair Oil Corp.

Myron P. Roebuck was named vice president-special products engineering, **Canoga Div.**, Underwood Corp., Van Nuys, Calif.

William S. Ivans Jr. was appointed vice president, **Cohu Electronics Inc.**, San Diego, Calif.

John F. Doran was promoted to chief industrial engineer at **Chase Metal Works**, Waterbury, Conn., Chase Brass & Copper Co. Inc. He replaces **John H. Burns**, now on the staff of the vice president-sales.

Frank A. Guba fills the new post of manager of marketing for **Damascus Tube Co.**, Greenville, Pa. He has served the company as a consultant on marketing for several months. He previously was manager-market research and development of Carpenter Steel Co.'s Alloy Tube Div.

OBITUARIES...

R. J. Skinner, 52, sales manager, **Rockford Machine Tool Co.**, Rockford, Ill., died Apr. 26.

Ronald W. Thompson, 60, sales engineer for **Transue & Williams Steel Forging Corp.**, died recently in Miami Beach, Fla.

John Hendrickson, 61, chairman, **Welding Engineers Inc.**, Philadelphia, died May 1.

J&L's $50 Million Project At Cleveland to Cut Costs

JONES & LAUGHLIN Steel Corp., Pittsburgh, has launched a $50 million program to improve its Cleveland Works, including construction of two basic oxygen furnaces and a large blast furnace. It follows closely completion of a $90 million program which doubled capacity for cold rolled sheets and plates and increased ingot capacity by about 80 per cent.

J&L's capital expenditures at all its plants during the next three years are expected to reach $234 million, including $165 million already budgeted. The funds will be spent for ore beneficiation, sintering plants, coke ovens, a new blast furnace, open hearth improvement, precipitators for smoke control, a new electrolytic line, and a continuous annealing line for the production of tin plate.

• **Will Cut Costs**—One of the primary objectives of the current program is cost reduction, especially in production of ingots. Says Avery C. Adams, chairman and president: "The basic oxygen process represents the only major technological breakthrough at the ingot level in the steel industry since before the turn of the century . . . The best open hearth practice results in a production rate of 39 to 40 tons per hour. Our basic oxygen furnaces (at Aliquippa, Pa.) produced at the rate of 106 tons per hour in April. On a 'trick heat' basis, we have hit 160 tons per hour."

• **Basic Oxygen Furnaces** — The two new furnaces at Cleveland are expected to produce 160 ton heats. They will have a combined annual rated capacity of 1.2 million tons and will be constructed adjacent to eight 175 ton stationary open hearth furnaces which are to be deactivated and partially dismantled.

Three 220 ton stationary open hearth furnaces with a rated capacity of 720,000 tons of steel a year will remain in operation. They have been equipped with oxygen lances and basic roofs to increase quality and to speed production. Two new large electric arc furnaces with a rated annual capacity of 420,000 tons also will be operated. That will bring the annual capacity of the Cleveland Works to about 2,340,000 tons compared with 1,945,000 tons at present.

• **Big Blast Furnace**—The new ironmaking facility to be constructed in the immediate vicinity of two other blast furnaces at the works will have one of the largest hearth diameters and one of the largest working volumes in the U. S. The 110 ft high stack will have a diameter of 32 ft and a working volume of 65,000 cu ft. It will have a daily rated capacity of 2500 tons and will increase the yearly rated ironmaking capacity at the Cleveland Works from 866,000 to 1.8 million tons.

• **Air Pollution Control** — J. R. Powell, manager, Cleveland Works, says all steelmaking facilities will incorporate the latest developments for air pollution abatement. Upon completion of the current program, about $10 million will have been expended since 1957 to minimize pollution. Included are electrostatic precipitators for the basic oxygen furnaces, the three open hearth furnaces to remain in operation, and the two electric furnaces; an orifice scrubber for the new blast furnace, and the recently installed blast furnace slag pit.

Kaiser Boosts Production

Kaiser Aluminum & Chemical Corp., Oakland, Calif., opened a new production line at its Ravenswood, W. Va., plant. An aluminum ingot casting station also will go into operation, increasing the plant's annual production to 108,750 tons of primary aluminum.

Kaiser Aluminum & Chemical Sales Inc. has established a new source of aluminum tube. The company has contracted with General Tube Co., Torrance, Calif., a subsidiary of General Aluminum Corp., for the manufacture of welded aluminum furniture tube which Kaiser will sell in the West.

Jerry Schmidt, president of General Aluminum, says a high speed Yoder tube mill and New Rochelle high frequency welding unit have been installed to manufacture the new line. The tube will be made from Kaiser aluminum coiled sheet or from reroll stock rolled and slit at General Tube.

Stamping Div. to Expand

Eaton Mfg. Co. is expanding its Stamping Div. at Cleveland. Capital expenditures: About $500,000. Under the program, manufacturing area of the plant will be increased about 22,000 sq ft, or 10 per cent. New equipment is being installed to expand the anodized aluminum and nickel-chrome plating facilities.

Revere Expands Foil Plant

Revere Copper & Brass Inc., New York, plans to increase its aluminum foil production capacity by expansion of its plant in Newport, Ark. The addition to the building and installation of new equipment will increase plant capacity by nearly 50 per cent, says J. M. Kennedy, chairman.

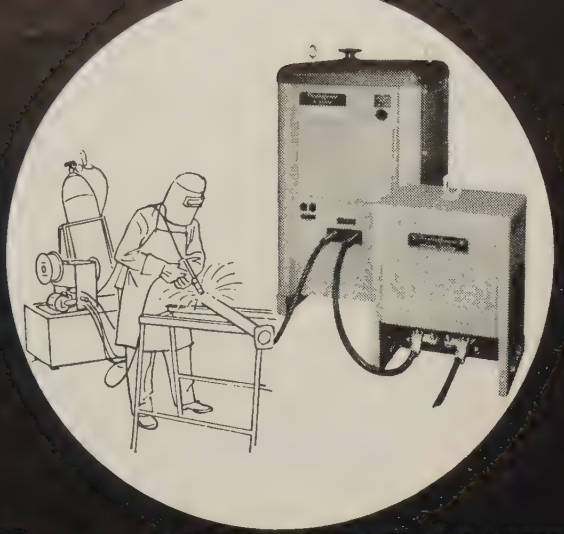
Haynes Installs Press

Haynes Stellite Co. has constructed a plant and installed a new forging press and other equipment at Kokomo, Ind., to process superalloys. Ingots will range from 1500 lb to 5 tons. All steps in alloymaking (from melting raw materials to producing finished sheets, plates, bars, wire, and remelt shot) are handled at the same plant. Haynes is a division of Union Carbide Corp., New York.

Expands Extrusion Plant

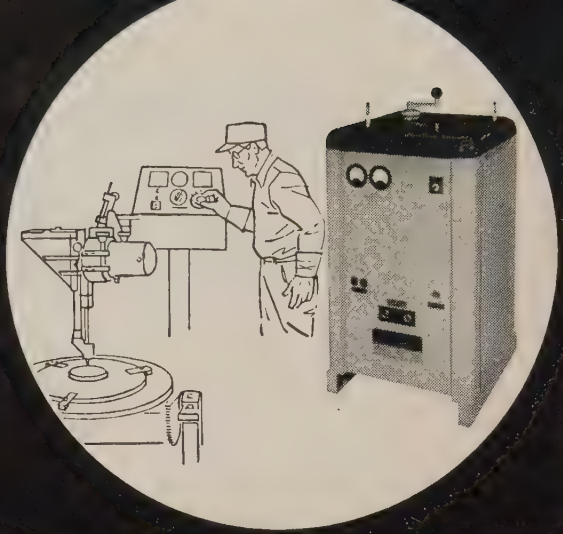
The U. S. Air Force has appropriated $2 million to finance the major part of an expansion program at Curtiss-Wright Corp.'s extrusion plant at Northland Avenue and Grider Street, Buffalo, N. Y. The company's share of the cost

(*Please turn to Page* 134)



1ST

The outstanding Type RCP Constant Potential Power Source for gas-shielded fully automatic and semi-automatic welding. Available in 500-, 600- and 1000-amp ratings to suit every need. May be used with separate Dynamic Reactor.



2ND

A complete 200-amp, Type RCC Constant Current Welding Power Source "package" for use with the popular WEST-ING-ARC® SA-110 and SA-111 semi-automatic hand guns and control monitor. Converts to manual welding use at the flick of a switch.

NOW

ANOTHER ADVANCEMENT TO EXTEND YOUR WELDING VERSATILITY

Westinghouse

"RCV" Welding Power Source

WITH BUILT-IN DYNAMIC REACTOR

It's the NEW 200-amp, Type RCV Constant Potential Power Source for gas-shielded welding—specifically designed as the most important "companion" for the WEST-ING-ARC SA-120 and 121 hand gun and control monitor.

The RCV Power Source, with its built-in contactor and controls and built-in Dynamic Reactor, opens new fields for welding of light-gauge steels—mild and stainless—aluminum and magnesium. It permits all-position welding . . . reduced welding wire costs . . . improved "wash" and penetration over a broad range of applications and material thicknesses.

Contact your nearest Westinghouse welding distributor or welding sales engineer. Or write: Welding Division, Westinghouse Electric Corporation, Buffalo 5, New York. J-22001

Features:

• Primary circuit breaker with full over-current protection • Thermoguards® in each transformer winding for thermal protection • Single phase—230 volts. May be used where higher primary voltage is not available; reconnectable for 460 volts • Auxiliary transformer for 110 volts to supply control monitor • Built-in contactor—operated by trigger of SA-120 and 121 gun
• Built-in Dynamic Reactor • Bonderized finish
• Dead-front Cam-Lok cable terminals and plug connection
And many other user advantages!

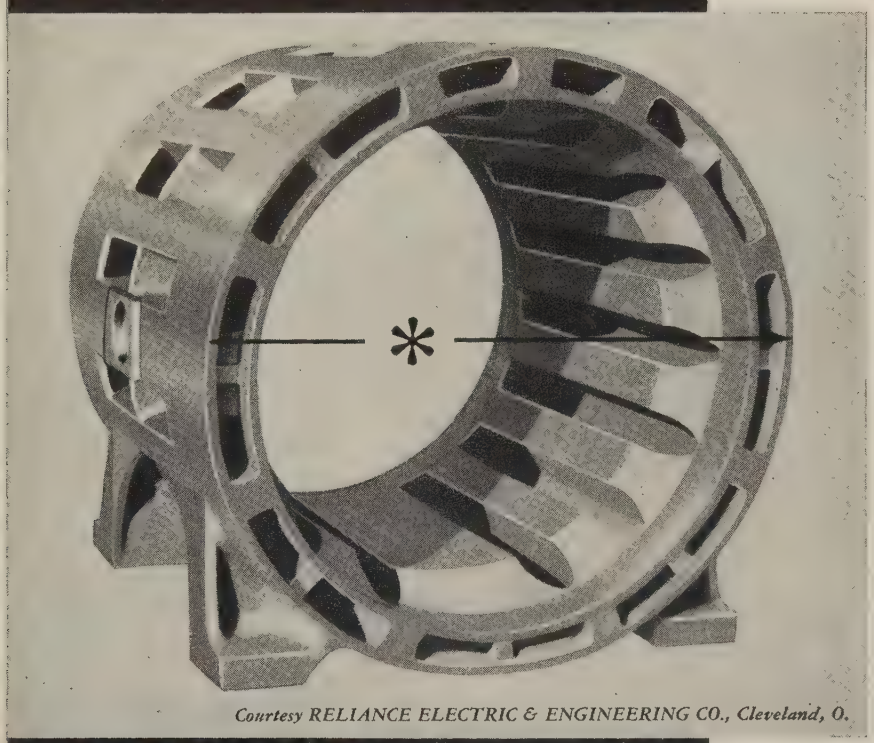
$795 IN ZONE 1
Zones 2 and 3 slightly higher

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV MONDAYS

Watch Westinghouse for New Developments in Welding

URICK'S DUCTILE IRON



Courtesy RELIANCE ELECTRIC & ENGINEERING CO., Cleveland, O.

MOTORS . . . . from the Lakes to the Sea

This 1300-pound URICK casting (a fan cooled motor stator frame made to Navy specifications) will withstand extra stress and strain and has better corrosion resistance because it is Ductile Iron. URICK recommends and successfully casts Ductile whenever greater tensile strength and higher impact value are of prime consideration because it has most of the advantages of steel, yet because of its high molten fluidity, it will take intricate shapes not possible with other high strength metals. Other advantages are—Ductile castability permits weight reduction while maintaining required physical properties . . . superior machinability reduces machining time and consequently results in longer tool life. There are other advantages and economies to Ductile when recommended, engineered, and cast by URICK, ask about them.

**This fan cooled motor stator frame to US NAVY specifications is cast in 16 different sizes from 16" to 42".*

Send for Bulletin on URICK's Ductile . . . ask for catalog on URITE gray iron and URICK's facilities, too! Remember, URICK starts with 'U.'

URITE CASTINGS

URICK FOUNDRY

ERIE, PENNSYLVANIA

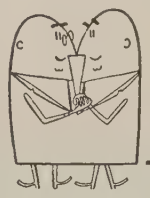
LICENSED UNDER PATENTS OF THE INTERNATIONAL NICKEL COMPANY., INC.

(*Concluded from Page* 131)

may run as high as $1 million. The plant is basically an Air Force installation operated by Curtiss.

Pittsburgh Screw Renamed

Pittsburgh Screw & Bolt Corp., Pittsburgh, changed its name to Screw & Bolt Corp. of America.



CONSOLIDATIONS

Rockford Machine Tool Co., Rockford, Ill., acquired **Maplewood Machinery Co.**, Chicago, producer of roll forming equipment, and **Ingels Elbow Machine Corp.**, Chicago, maker of power and hand tools for sheet metalwork. All manufacturing activities will be moved to Rockford and operated as the Maplewood Div.

Chicago Pneumatic Tool Co., New York, acquired **Reich Bros. Mfg. Co. Inc.**, Terre Haute, Ind., and will operate it as the Reichdrill Div. The firm makes truck and crawler mounted hydraulic rotary blast hole drills, and drilling rigs. The acquisition also included **Reichdrill Mfg. Co. Ltd.**, Glasgow, Scotland.

National Supply Co., Pittsburgh, purchased **Fluid Packed Pump Co.**, Los Nietos, Calif., maker of downwell pumping equipment for oil country use. The property will be operated as a division with Sidney Shuman as chief executive officer.

Fostoria Pressed Steel Corp., Fostoria, Ohio, **Chempump Corp.**, Philadelphia, and **Zenith Engineering Corp.**, Philadelphia, will merge to form Fostoria Corp. Fostoria makes industrial lighting units, electrical infrared ovens, and sealless pumps and through its subsidiary, Safway Steel Scaffolds Inc., scaffolds, bleachers, and allied items. Chempump makes sealless pumping equipment. Zenith, an affiliate of Chempump, is an engineering development and patent holding company.

Van Norman Industries Inc., New York, acquired working control of

American Pulley Co., Philadelphia. C. F. Myers is president of both firms. American Pulley makes power transmission and material handling equipment and pressed metal specialties.

American Aluminum Co. and **Cochran Foil Corp.** have merged with **Anaconda Aluminum Co.**, subsidiaries of Anaconda Co., New York. Anaconda organized the American Aluminum Co. in 1958 for the purpose of the merger. That corporation is being dissolved.

Anaconda Wire & Cable Co., Hastings-on-Hudson, N. Y., a subsidiary of Anaconda Co., New York, is purchasing **Sequoia Wire & Cable Co.**, Redwood, Calif., from Mandrel Industries Inc. It will operate the company as a wholly owned subsidiary for the manufacture of small wire for use in aircraft, missiles, and electronic controls. Mandrel will continue to produce electronic instruments and custom assemblies at its Burbank, Calif., plant.

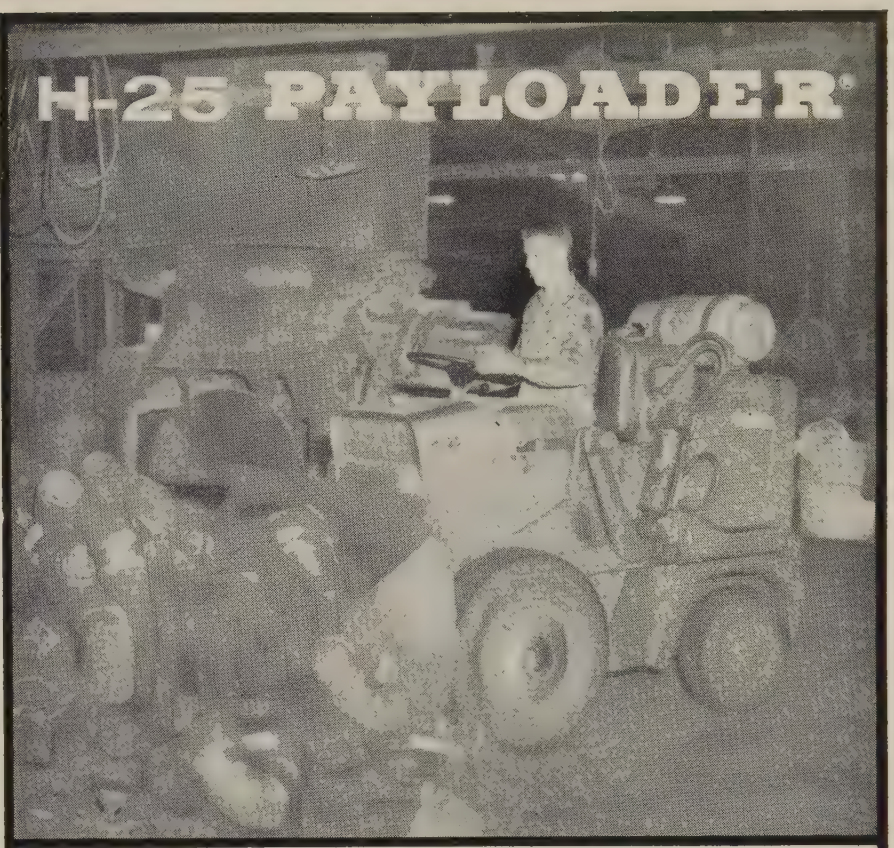
American Steel Foundries, Chicago, will purchase **South Bend Lathe Works**, South Bend, Ind., subject to approval of stockholders. The company makes metalworking lathes and other machine tools and accessories. R. E. Frushour will continue as chief executive officer of the South Bend firm.

ASSOCIATIONS

National Screw Machine Products Association, Cleveland, elected these officers: President, L. R. Schaffer, Mechanical Art Works Inc., Newark, N. J.; vice president, C. L. Kerr, Kerr-Lakeside Industries, Cleveland; and treasurer, R. G. Herker, Herker Screw Products Inc., Milwaukee. Orrin B. Werntz was re-elected counsel and executive vice president; Margaret S. Ballinger, secretary.

American Zinc Institute, New York, elected these officers: President, R. G. Kenly, New Jersey Zinc Co., that city; executive vice president and secretary, J. L. Kimberley; treasurer, G. H. LeFevre, U. S. Smelting, Refining & Min-

(*Please turn to Page* 140)



"moves 25-30% more material"

Bremen Gray Iron Foundry, Inc., Bremen, Ind., has been using "PAYLOADER" tractor-shovels for 9 years and has developed an efficient "PAYLOADER" sand-handling set-up.

According to General Manager, H. J. Hueni, their Model H-25 with 1,500 hours of service is an 11 to 16-hour work horse each night. It moves the castings and sand (about 250 tons) from the floor to the shake-out about 200 feet distant. On return trips, it delivers sand (about 210 tons) from muller to the 35 molding stations.

Night Foreman, Gene Hawkins says, "No getting around it, our 'PAYLOADER' units do lots of work and require few repairs. The Model H-25 has greatly improved material-moving efficiency. Its larger capacity, combined with power-shift transmission and power-steer, are the main reasons it moves 25 to 30% more tonnage an hour than our Model HA's."

More power—more traction
Backing up the increased carry capacity (2,500 lbs.) and faster cycles of the Model H-25 are greater engine power, power-transfer differential and 4,500 lbs. of bucket breakout force that provide more reliable traction and digging power . . . all accomplished while reducing the turning radius to 6 feet.

If you want the most carry capacity on the shortest-turning tractor-shovel for sustained high output, ask your Hough Distributor to demonstrate a Model H-25.

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5-A-2

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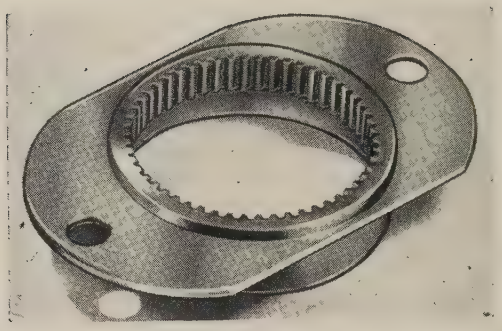
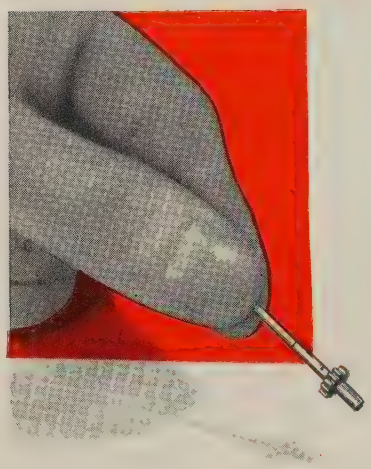
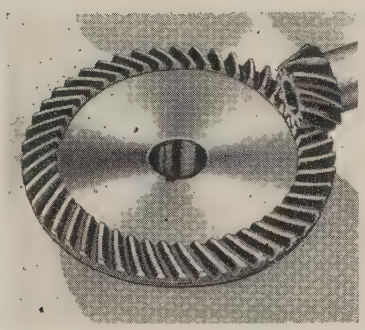
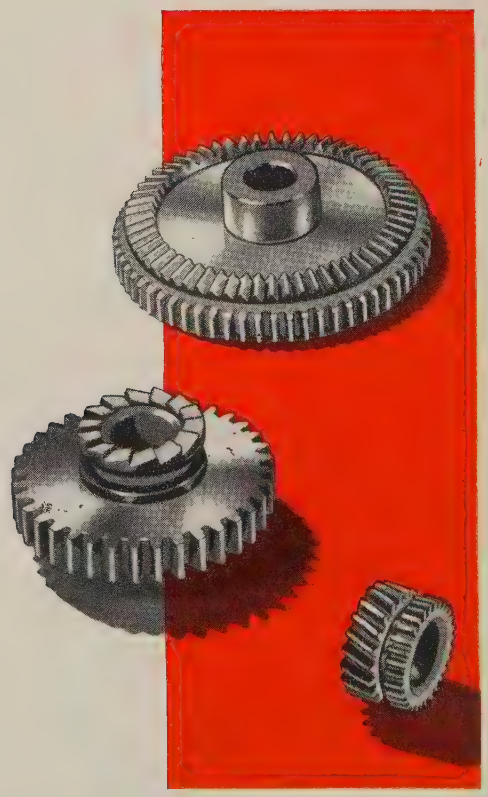
City State





if precision is your problem .





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Being precise, almost to perfection, on a single piece or even two or three isn't much of a challenge to any competent shop. Being precise in terms of holding to really close tolerances on hundreds of thousands of pieces on a production run is something else again. Yet that's the kind of performance on which G.S. has built an unsurpassed reputation.

We set G.S. standards high to begin with: and we back them up with one of the finest plants of its kind in the country—with the most efficient machinery to be had—with first-class engineering in both design and production—with quality control systems and equipment which aim at perfection. Because every man in our plant knows that our standards brook no compromise, we've more than once had to reject only five or six finished Gears out of a production run of thousands.

If you value precision results on a production basis, in Worm Gearing, Bevels, Helicals, Ratchets, Zerols, Spirals, Clusters, Internals, Splines, Pinions or any other Gearing of special or standard design in sizes from 8 to 120 dp, from ⅛″ to 8″ diameter, G.S. belongs on *your* supplier team. Our engineers are at your service to discuss development of new projects, or better means to accomplish old ones.

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•

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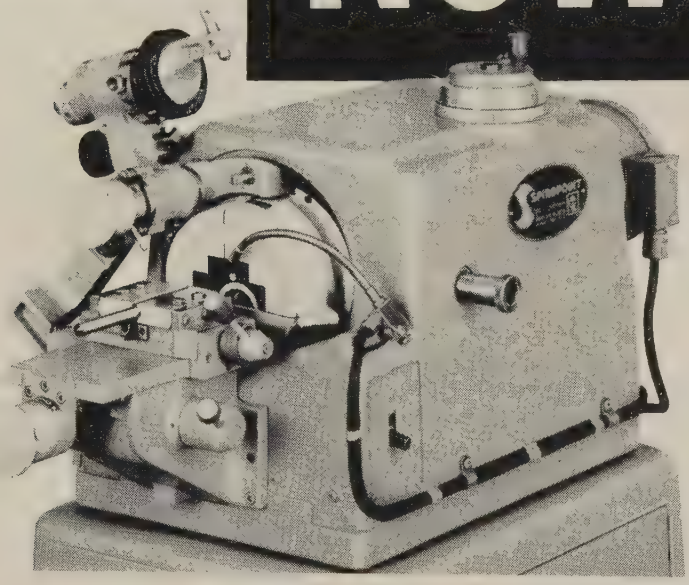

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(*Concluded from Page* 137)

ing Co., New York; and vice presidents, T. A. Campbell, Anaconda Sales Co., New York, H. D. Carus Matthiessen & Hegeler Zinc Co., LaSalle, Ill., and E. H. Snyder Combined Metals Reduction Co., Salt Lake City, Utah.

Ductile Iron Society has been organized by producers in the U. S. and Canada. Officers are: President, R. S. Thompson, H. P. Deuscher Co., Hamilton, Ohio; vice president, William Beatty, Morris Bean Co., Yellow Springs, Ohio; secretary and treasurer, R. K. Guise, Huhn's Bros. Co., Dayton, Ohio. James H. Lansing was named executive secretary. Mailing address of the society is P. O. Box 858, Cleveland 22, Ohio.

American Society of Tool Engineers, Detroit, elected these officers: President, Wayne Ewing, Arrowsmith Tool & Die Co., Los Angeles; treasurer, C. M. Smillie, C. M. Smillie Co., Ferndale, Mich.; secretary, H. Verne Loeppert, Boyd Wagner Co., Chicago; executive secretary, H. E. Conrad, Detroit; assistant executive secretary, A. R. Putnam, Detroit; and vice presidents, H. Dale Long, Scully-Jones & Co., Chicago, William Moreland, F. E. Myers & Bro. Co., Ashland, Ohio, D. A. Schrom, York Div., Borg-Warner Corp., York, Pa., and P. R. Marsilius, Producto Machine Co., Bridgeport, Conn.

American Welding Society, New York, elected these officers: President, C. I. MacGuffie, Air Reduction Sales Co., New York; first vice president, R. D. Thomas Jr., Arcos Corp., Philadelphia; and vice president, A. F. Chouinard, National Cylinder Gas Co., Chicago.

NEW PLANTS

E. F. Houghton & Co., Philadelphia, opened its new warehouse and office in Carrollton, Ga., and is completing construction of an adjoining plant. Upon completion of the installation of manufacturing equipment, defoamers, wetting agents, detergents, lubricants, metalworking and heat treating products will be produced locally.

DIES TO WORK MICA AS PRECISELY AS THIS

require the critical inspection that only the Kodak Contour Projector provides.

SPECIAL HIGH-PRECISION DIES are needed to stamp out an intricate mica blank like this, used for positioning electronic tube elements.

Tolerances are on the order of ±0.0002″. In making such dies the firm of Schneider and Marquard, Inc. (specialists in punches and dies for precision mica products) was not satisfied with the accuracy limitations of ordinary inspection methods, and turned to *optical* inspection.

Even then, they found that only one instrument could provide the extremely precise degree of inspection needed, with unparalleled accuracy on all parts of the screen image. That instrument was the Model 30 Kodak Contour Projector.

Accuracy, plus . . . With this large-screen (30-inch) comparator you get a projected image that's as *free* from distortion as the science of optics will permit—accuracy on *every* inch of the viewing screen, including the very edges.

You get a sharp, high-contrast image that's erect and unreversed at all magnifications. Changes in magnification can be made at the flick of a switch.

More refinements . . . You also get efficient head-on surface illumination and a full 16″ throat clearance between collimator lens and front mirror. This clearance is constant at *all* magnifications, permits staging of large parts without repositioning. The many other advanced refinements, extreme optical stability, and rugged construction of the Model 30 Kodak Contour Projector make it a leading choice for large-screen precision micrometry or routine gaging.

Cut inspection costs . . . Along with accuracy, optical gaging with Kodak Contour Projectors offers you savings in tool costs, increased inspection rates, and the economies that result from a minimum of operator training.

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You can now reduce your chromium and silicon costs with CHROM-ADD 25-5, a new exothermic alloy from Ohio Ferroy-Alloys.

CHROM-ADD 25-5 was developed specifically as an economical way to add chromium and silicon to open hearth steel. CHROM-ADD 25-5 embodies the convenience and consistently high alloy recovery you've come to expect of exothermic ladle additions. **Costs are competitive with practices that now require furnace additions of lump alloys.** You also eliminate the costs of weighing and handling bulk alloys, save furnace time . . reduce fuel and refractory costs.

CHROM-ADD 25-5 is packed in sealed steel cans each containing 25 lbs. of chromium and 5 lbs. of silicon. For each 1% chromium addition, you get .20% silicon. Consequently, supplemental ladle additions of ferrosilicon are substantially reduced or, in many cases, not required at all.

Get the facts now on CHROM-ADD 25-5 . . . the accurate, convenient and economical way to produce chromium steel in the open hearth. Our nearest sales office will be glad to give you full details.

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ANOTHER ADVANTA
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COMPUTER CONTROLS FLAME CUT— The British have a new oxyacetylene cutting machine which is controlled by a computer to make more accurate cuts in ship plates. *Welding & Metal Fabrication* reports that at least two British shipyards plan to construct entire bulkheads before cutting them with the computer-controlled machines to fit mating parts. The development is said to practically eliminate problems with accurate fitups.

CUTS PORCELAIN ENAMEL COST— A new Virginia rutile (a constituent of porcelain enamel frits) is a replacement for more expensive white titanium dioxide, says Metal & Thermit Corp., Rahway, N. J. It modifies the whiteness of white enamels less than older types of rutiles. If some off-white can be tolerated, it can replace all of the titania in enamels for hot water tanks, washing machines, and stove interiors.

LIGHTER STRUCTURALS TO FORE— Some steel firms, aware of the trend to lighter, more efficient construction needs, offer lighter structurals for equipment makers. Dorsey Trailers Inc., Elba, Ala., uses such a structural made by Jones & Laughlin Steel Corp., Pittsburgh, for cross-sills. The trailers can support more than six times their own weight.

ANNEALING PROGRESS— Steel sheets are expected to be annealed more economically in a direct fired gas furnace being developed. The aim: Fuel savings over present radiant installations. Salem-Brosius Inc., Pittsburgh, is also working on continuous fuel-fired annealing of aluminum coils and induction annealing of nonferrous metals.

DIP PACKAGING— Two new, easily stripped compounds are available. Parts are simply dipped in a hot liquid (one is applied at 120° F; the other at 350° F). Unlike versions based on World War II formulas, the 350° F coating is effective at 165° F; both are flexible at minus 65° F, an important factor in air transportation. The 120° F film has a built-in fungicide and is best suited for delicate instruments and optical parts. The developer, Army's Aberdeen Proving Ground, Maryland, says the specifications are available for civilian use.

ZINC FOR BETTER SOLDER— Tests have shown that a solder composed of 30 per cent zinc and 70 per cent tin is the best combination for strength and corrosion resistance in joining uranium to aluminum. Battelle Memorial Institute, Columbus, Ohio, used foils, plating, and dipping before heating the elements for joining.

FOR SPACE AGE PRODUCTION— Ion engines for space vehicles will be produced by Goodrich-High Voltage Astronautics Inc., Burlington, Mass., a new firm. It was formed by B. F. Goodrich Co. and High Voltage Engineering Corp.

CERAMICS LIGHTEN MOTORS— A better ferrite developed by General Ceramics Corp., Keasbey, N. J., is said to improve the efficiency of high frequency power inversion. Replacing a conventional 60 cycle alternating current motor with one that operates on 1000 cycles can cut motor weight in half.

WHAT'S THE BEST CLEANER?— You can find out in report PB 131964, available from the Department of Commerce, Washington 25, D. C. It contains data assembled by the Navy on various cleaners and passivaters for use with corrosion resisting steels.

Rx FOR DUCTILE IRON— EM alloy 55 permits magnesium recoveries up to 50 per cent when making ductile iron, says Union Carbide Metals Co., a division of Union Carbide Corp., New York. The new formula minimizes temperature loss, pyrotechnics, and the inefficiencies of tramp metals.

Lathe Can Advance with Technology

Building block principle allows it to be updated. Welded steel construction adds needed rigidity. Clearing says price is competitive with units of conventional design

SOME manufacturers build planned obsolescence into their products, but Clearing Div. of U. S. Industries Inc., Chicago, is building its new Blue Chip lathes to last indefinitely.

Of rigid, welded steel construction, the lathes are designed to use carbide and ceramic cutting tools to machine the high strength alloys being developed. The headstock, which contains the drive and operating controls, is built as a separate unit and can be assembled to a bed of any size. It is also possible to replace the manual speed selection with electropneumatic controls.

Here is a lathe that you can modify as production requirements change and modernize as new developments appear.

• Clearing is promising 30 day delivery.

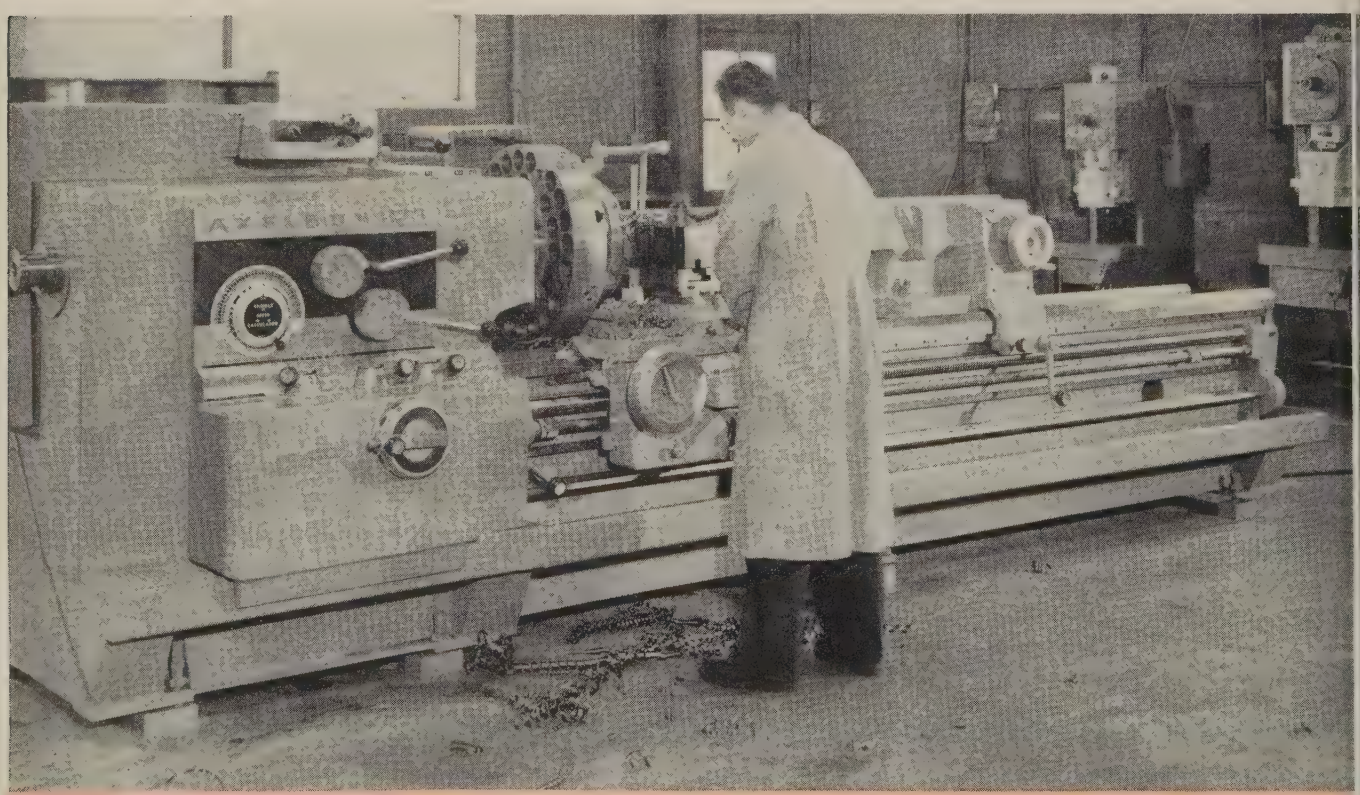
The company has already sold two machines and has 12 more in production. Paul M. Stanton, manager of the Machine Tool Div., says he will stock components so that an assembly job is all that's required when an order is received.

Clearing's distribution and service organizations are set up for the Blue Chip line. Later this year, the company's west coast plant will start assembling models for distribution in that area.

• Welded construction was a natural for the builder.

Clearing is a pioneer of welded steel fabrication in the hydraulic and mechanical press field. In 1958, when U. S. Industries realigned product lines within its divisions, redesign of the Axelson lathe was handed over to Clearing. That division soon established that welded steel construction was the only practical way to achieve the degree of rigidity it wanted.

The new Clearing-Axelson lathe has 18 times greater rigidity than equivalent cast iron construction, says Mr. Stanton. The bed has continuous reinforcement from end to end; the pedestal, bed, and ways are built as an integral unit. Fur-



Rigidity of the Clearing-Axelson lathe is increased by its welded steel headstock and bed. Carbide or ceramic tooling can be used to machine the toughest alloys. Beds of any size and type can be attached to the self-contained headstock

her, the front wall of the bed which takes most of the force of he cutting loads has been extended to the floor. The chip pan extends considerably forward and adds strength to the entire structure.

Ribs are placed inside the structure so that a series of pyramid shapes are formed. The reinforcing ribs also serve as the wall of the chip disposal chutes in the bed.

The welded steel headstock is built independently. A thick, wide flange provides secure mounting to the bed.

In a test to show STEEL editors the rigidity of the machine, Clearing engineers hoisted the tailstock end of the lathe about a foot off the floor and jiggled it while taking a cut on a 1045 steel forging, 7½ in. in diameter. The tool was taking a 5/16 in. bite out of the forging while the work traveled at about 300 sfpm.

When miked, variation in the 15 in. long cut was found to be about 0.002 in.

• Cast construction was used for the quick-change gear box, tailstock, apron, and cross slide for economy and appearance.

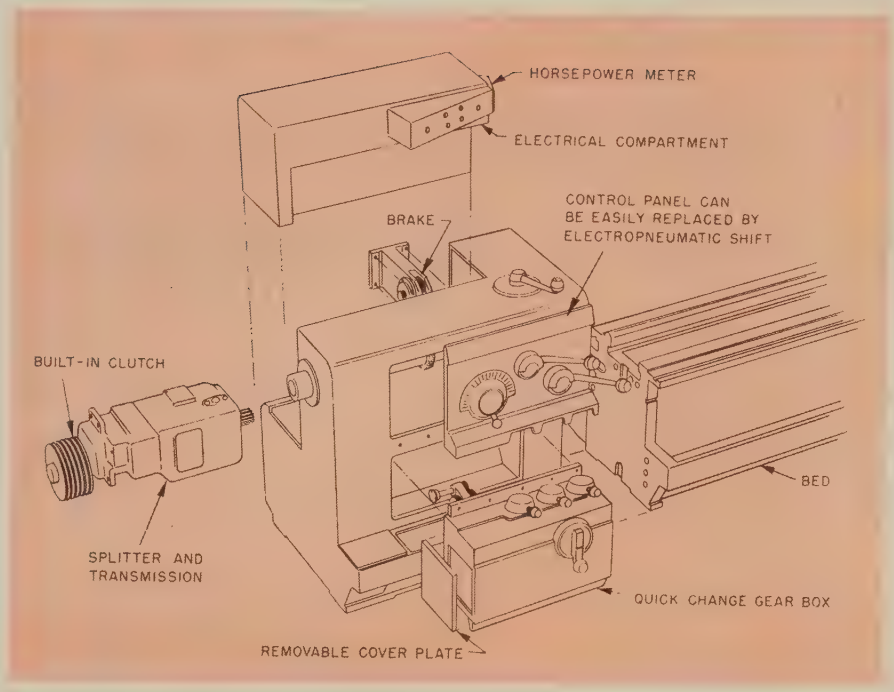
Those machine members are relatively small in size and would require a multiplicity of small details to form the walls, ribs, and bosses. It would not have been economical for Clearing to fabricate the parts in its weld shop.

The builder feels that judicious use of castings is an economical way to obtain styling effects. They can dramatically embellish weldments which are kept straight and clean for ease and cost of fabrication.

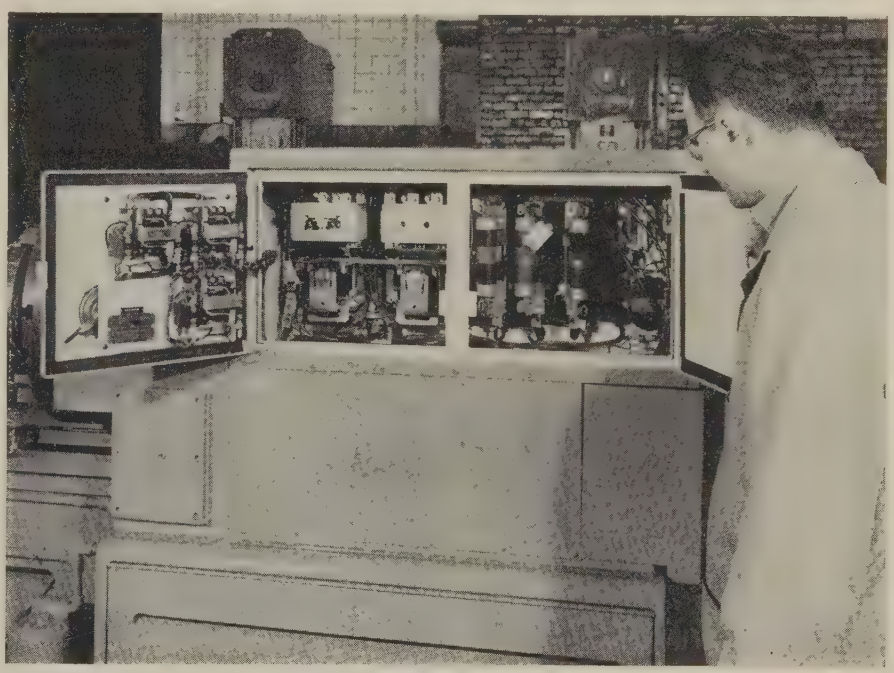
• The lathe has 40 spindle speed changes at closely spaced intervals and 88 carriage and threading feeds.

Speeds up to 2000 rpm make it possible to machine any material with maximum efficiency. A 50 hp main motor delivers torque to the spindle. Rough threading and heavy interrupted cuts are easily handled without perceptible chatter.

Unitizing has been carried out on every major component of the headstock. Drive gearing, quick change gear box, and electricals may be removed as units to simplify servicing. The feed gear box is completely enclosed and attaches to the front of the machine. All electrical accessories are contained in a common enclosure that mounts in a recess in the headstock.



Unitized design of the headstock allows easy accessibility of all components. Drive gearing, quick change gear box, and electricals can be removed as units



Electrical controls are mounted in an enclosure at the rear of the headstock. They can be easily reached for routine servicing

• Electropneumatic power shifting can be added.

Standard gear shifting on the Blue Chip is manual. A four position and a five position lever operating in two ranges take care of all speed changes. Power can be added at any time since factory installation is not required.

Clearing also is working with General Electric Co. on a numerical control system that can be adapted to the lathe.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Chemical Tames Corrosion In Nitrogen Gas Generator

Sodium vanadate inhibits action of aqueous monoethanolamine. See table below for corrosion rates before and after it was tested at Michigan Seamless plant

HERE'S help for heat treaters and fabricators with corrosion problems in nitrogen gas generators that use monoethanolamine (also known as MEA) to remove carbon dioxide from furnace atmospheres.

Dow Chemical Co., Midland, Mich., has confirmed the effectiveness of sodium vanadate as a corrosion inhibitor in aqueous MEA solutions. For more than two years, the chemical has controlled corrosion in a nitrogen gas generator at Michigan Seamless Tube Co., South Lyon, Mich.

The firm produces seamless pressure, heat exchanger, and mechanical tubing. Annealing is a fundamental part of the operation. The furnaces must have an inert atmosphere free from carbon dioxide to prevent scaling.

The atmosphere is produced in a nitrogen gas generator that uses MEA to remove carbon dioxide. When the carbon dioxide is removed from the combustion gases, corrosion products build up in the MEA solution.

• Corrosion products attack many parts of the closed circuit process.

Air, with a certain amount of added natural gas, is used to make up the fuel for the generator. The gas travels into a combustion chamber where nitrogen and carbon dioxide are the major combustion products. It next moves into a heat exchanger, and then into an absorber where the MEA solution removes the carbon dioxide from the atmosphere.

From there, the gas passes through a refrigeration unit and finally into a dryer that lowers the water content still more. The result is a dry gas that provides a protective atmosphere for the tubing.

A second recirculating system is for the MEA solution. A reboiler strips the solution from the carbon dioxide, after which the MEA is passed through heat exchangers. It is then returned to the absorber tank for re-use in removing carbon dioxide.

• Michigan Seamless had a serious corrosion problem for about three years.

Piping failures were the most frequent. After the generator had been in operation only a few months some piping had to be replaced almost monthly—especially that which carries rapidly circulating MEA from the combustion chamber.

The reboiler also corroded, particularly in the area of the combustion chamber which is surrounded by MEA solution. The outside of the fire chamber corroded heavily, as did the interior of the reboiler's outer shell. The reboiler had to be replaced long before its usefulness would normally have ended.

By 1955 (three years after the installation), the problem had become so crucial that serious thought was being given to replacing all parts affected by the MEA solution with stainless steel.

• Consulted on the problem, Dow chemists thought they had the answer.

Their idea was to put a quantity of sodium vanadate into the MEA solution. Since the chemical had shown great promise as a corrosion inhibitor in laboratory tests the hope was that it would be equally effective in field tests.

Their reasoning traced back to a

Case History of Sodium Vanadate in Action

BEFORE

	1 month weight loss	Penetration per year
Rich MEA	13.0 grams	98.9 mils
Lean MEA	12.3 grams	93.5 mils

AFTER

	2 month weight loss	Penetration per year
Rich MEA	0.0009 gram	0.013 mil
Lean MEA	0.0016 gram	0.024 mil
	3 month weight loss	**Penetration per year**
Rich MEA	0.0016 gram	0.016 mil
Lean MEA	0.0017 gram	0.018 mil

heory on how sodium vanadate reacts with iron. Iron is assumed o be normally covered with an oxide film that has many pores or racks. Through these openings, errous ions are given up to pass nto solution. When sodium vanadate is present, the emerging ferrous ions are converted to ferric ons. They react with water to orm an insoluble oxide that plugs he pores, sealing the iron surface gainst further reactions. So in this ase, the escape of ferrous ions is nhibited.

• An initial step toward finding he answer to the corrosion problem was to get an accurate reading of ts extent.

Pipe nipples were used as specimens. They were put into the lean and rich MEA lines on Aug. 30, 1955, and left there one month.

Results: Weight loss on the lean side was 12.3 grams, and penetration per year was rated at 93.5 mils. On the rich side, weight loss was measured at 13.0 grams, and penetration per year was established at 98.8 mils.

Sodium vanadate was introduced in the system Nov. 13, and two sets of mild steel strips were installed at the same time. One set was removed Jan. 14, 1956, revealing impressive results with the inhibitor. Rich side weight loss was only 0.0009 gram and the lean side weight loss was measured at 0.0016. Penetration per year was 0.013 mil on the rich side, and 0.024 on the lean side.

In February, the other set of strips was removed. Findings: Rich side weight loss was 0.0016 gram, and lean side weight loss was 0.0017 gram. This meant that the penetration per year was only 0.016 mil for the rich side and 0.018 for the lean side.

Weight loss and penetration, originally greater on the rich side than on the lean side, were shown to be larger on the lean side after the inhibitor was added. The precise figures are insignificant, say Dow chemists; what is important is the pronounced trend toward corrosion control that they indicate.

This is particularly true in the case of Michigan Seamless. In the first place, differences between lean and rich side mixtures are not sizable. Also, corrosion is now so minor that another reading might well show that rich side losses were again larger than lean side losses and still insignificant.

• Dow chemists periodically analyze the inhibited MEA to make sure the proper level of sodium vanadate is being maintained.

The system is drained annually and replaced with a new solution which includes from 10 to 15 lb of sodium vanadate.

"The result is that corrosion has been well controlled for more than two years," says Edward Zywiec, assistant to the chief engineer at Michigan Seamless. "Considering the problem we were up against, the inhibitor has given us all the help we have hoped for."

SAFER X-RAY UNIT means faster operation. This Picker unit is connected to a television screen and an amplifier which enlarges and intensifies the image. The radiographer is checking operation of a gear

Viewer Shows Inspectors Maximum Passable Defects

Inspectors can be shown maximum passable defects with a three dimensional viewed at Timken Roller Bearing Co., Canton, Ohio.

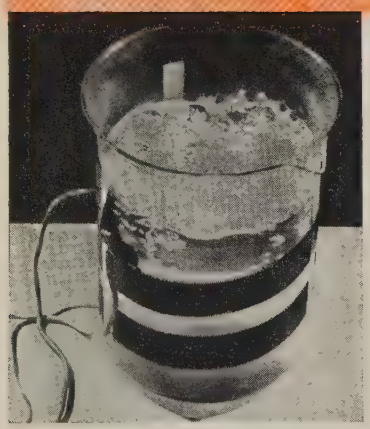
The technique is especially suited for on-the-job training of inspectors. The trainee rarely has the opportunity to see all defects in this category. Sets of standard samples may be difficult to obtain. They can rust, discolor, or be misplaced. With the viewer, all trainees in all plants can be shown one standard set.

Samples of defects in components for bearings, cups, cones, cages, and rollers are photographed in 3-D.

Positive transparencies stripped into a continuous roll are sent in viewers to all plants for training and quick reference.

Wide Use Predicted for New Graphite Fabric

- Reinforcing refractory material
- High temperature heating elements
- Vacuum tube grids, infrared emitters
- Static eliminators and lamp filaments
- Jet engine seals
- Thermal or acoustical insulation



Resistance Heating

Lamps

Heat Resistance

A PROCESS to convert organic textile forms directly to graphite with a purity exceeding 99.9 per cent has been developed by National Carbon Co., a division of Union Carbide Corp.

Only experimental quantities have been produced so far. They are being tested and evaluated by industrial and military personnel.

Graphitizing is accomplished by electrically heating a fiber or fabric such as rayon to about 5400° F. The crystalline structure of the material is changed. The graphite formed is similar to the manufactured type used for electric furnace electrodes, nuclear reactor structures, metallurgical molds, and other industrial products.

• Nearly every segment of industry eventually may benefit from the development.

That's because graphite has a unique combination of electrical, chemical, mechanical properties.

At ordinary pressures, graphite has no melting point, and sublimes at extremely high temperatures (about 6600° F). It gets stronger at higher temperatures, and tensile strength at 4500° F is about twice that at room temperatures.

Above 750° F oxidation sets in. The known properties are unaffected by liquid nitrogen at −320° F.

• Graphite fibers and fabrics can give electrical and thermal conductivity to such materials as plastics, ceramics, and glass cloth.

Graphite textiles resist attack by acids, alkalies, and organic compounds (except highly oxidizing types), and are unreactive with many molten metals. Electrical and thermal conductivity is good and they're immune to thermal shock.

The material is being considered for filtering hot nonoxidizing gases; corrosive fuel handling; electrostatic precipitators, curtain walls, and flame arresters.

Fiber resistance heating elements can operate at high temperatures. Possibilities include home panel units.

• The material is being evaluated as a reinforcing agent for high temperature plastics and refractories, especially for those subject to thermal cycling.

Possible mechanical applications include valve packing and gasket materials for high temperature seals as in jet engines. Conveyor belting for high temperature equipment is another possibility.

Use as thermal or acoustical insulation is also being explored.

New Machine Boosts Builder Sales

The special is being turned out in job lots, thanks to a warm reaction from customers and potential customers. New business will accelerate the company's recovery

ONE of the surest ways to hoist a company out of a recession rut is to come up with a revolutionary product that customers need.

The Milwaukee-Matic, the tape controlled milling, drilling, and boring machine that changes its own tools, is proving itself to be a recession buster for Kearney & Trecker Corp., Milwaukee.

Francis J. Trecker, president, told STEEL that the company's new business in the special machines will be a major assist this year, but it's also accompanied by growing volume in standard machine tools that K&T builds. Production of standards is slated to jump 52 per cent from the first quarter to the fourth quarter.

In the same period, production of Milwaukee-Matics will follow a planned pace. The rate will be at least one a week by the yearend.

At the company's special machine plant, on Milwaukee's west side, the new machines already are moving down the production line. The first lot of ten is nearly finished; one has been shipped to GE, the control builder; and another is set up in a demonstration area. The second lot of ten machines has entered the first production stages.

• **Sales are based on estimated savings that sometimes seem fantastic.**

Only a few weeks ago, K&T representatives called on an aircraft subcontractor in San Diego, Calif. He showed them a part that he had to produce regularly—a complex job that swallowed up 65 hours of machining. He figured the Milwaukee-Matic would do it in 4½ hours.

Such savings have resulted in 23 firm orders for the machines. (They sell for about $140,000 each.) An aircraft company signed up for five.

The manufacturing vice president of a large, multiplant corporation told K&T officials that he figured his company would need about 60 in the next few years.

To further the optimism in Milwaukee, letters of intent (usually separated from orders only by paperwork and red tape) are in on at least 23 more machines. And inquiries continue to pour in.

Coupled with a general machine tool recovery, the dollar volume in Milwaukee-Matics should help K&T back to a near record pace.

Split-Hair Positioning

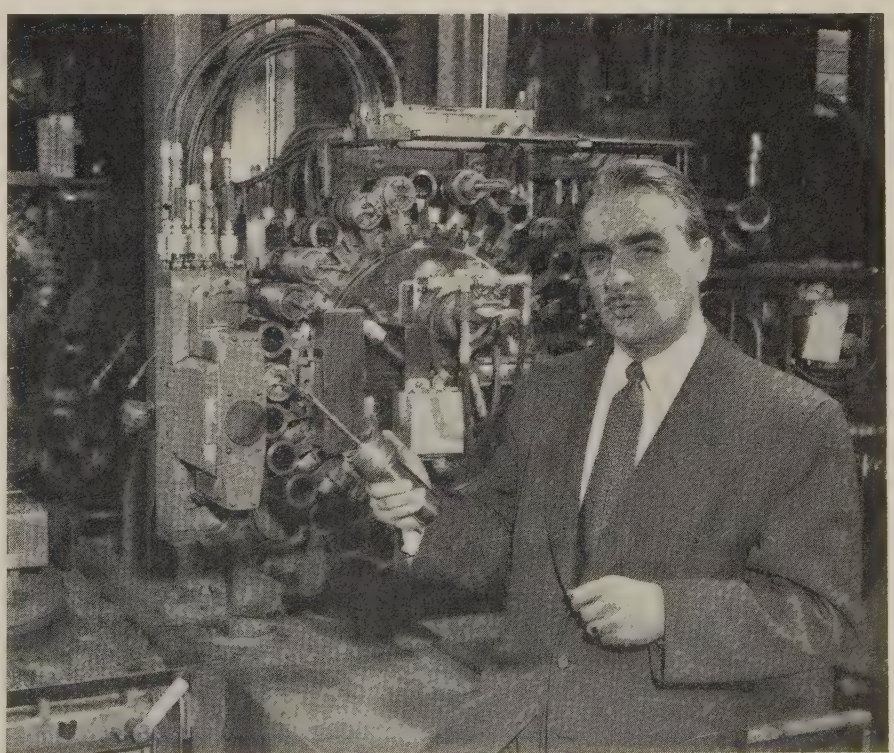
At a press preview of a numerically controlled positioning table (STEEL, May 4, p. 98), executives of American Tool Works, Cincinnati, came up with a demonstration that had the controlmakers, Sperry Corp. of Canada, Montreal, Que., nervous.

A dial indicator, graduated in ten-thousandths of an inch, was put on the saddle and zeroed against the table. Then the tape was put in action. It moved the table, a ten thousandth at a time.

The demonstration worked. Key to the precision: Hydraulic drive for the table that precluded backlash, play, or windup in the system.

More on Tape Control

Sperry (Canada), the same company that tailored the control system for American Tool Works, is adding the control to two DeVlieg jig mills for Pratt & Whitney Aircraft Corp.



K&T's Francis J. Trecker: "The machine's ability to change these tools automatically, and to use them, has given us a sales success that will justify a production schedule of at least one machine a week before the end of the year"

Even Rookie Welders Can Use This Method

Fine wire, lower current and voltages add up to a new technique called Dip Transfer. The cycle shown at right is repeated 100 to 200 times a second

A NEW technique, called Dip Transfer, greatly simplifies carbon dioxide shielded, semiautomatic welding.

Designed and marketed by Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York, the system relies on fine wire (0.045 in. or less), low voltage and current (19 volts, 200 amperes), and a small weld pool to produce spatterfree, strong welds in mild and low alloy steels.

In unveiling its method at the recent welding show in Chicago, Airco pointed to these additional advantages: 1. An unskilled person can learn to operate the equipment satisfactorily in less than 30 minutes. 2. He can weld fillets or butt joints on 16 gage metal in any position—vertical, horizontal, or overhead. 3. Spatter losses are less than 5 per cent. 4. An operator can lay down 6 lb of weld metal an hour. 5. The same equipment can be used for other conventional, inert gas shielded techniques with standard size wires.

• Reliability is tied to a dip and break cycle between the wire and the molten pool.

Arcwelding has always required skillful control of an open arc. An operator strikes an arc between an electrode and the work to form a puddle of weld metal. That's where skill, training, and experience count heavily. Poor arc control can bring about cold welds, inclusions, skips, spatter, and other problems.

Dip Transfer gets around the need for such control by its dip and break. Metal is melted by a wiping action during a short circuit. (It is not projected through an arc stream.) Short circuits are caused by the wire dipping into the weld pool. The short circuit puts a load on the power supply, creating a current surge. Before the current reaches its peak, the wire overheats and melts into the weld pool. Contact is then broken (with an assist from an electromagnetic pinch) and a fairly high current arc is established.

The make and break effect creates a kind of steady pulsing which can be varied by power supply adjustments. As in regular consumable electrode welding, wire feed is controlled or regulated by current level.

• Power source must be made especially for this application.

Inductance has a regulating effect on the arc cycle. Power supplies must provide a constant or rising voltage under increasing loads (called constant or rising potential). Current levels are below 200 amperes to keep the puddle small and easy to manage.

The Airco welding gun has drive rolls to pull the wire through the long casing and avoid buckling which sometimes occurs with pusher feeds.

ACHESON

dispersions digest

Reporting uses for

dag® BRAND DISPERSIONS

COLLOIDAL DISPERSIONS OF GRAPHITE, MOLYBDENUM DISULFIDE, AND OTHER SOLIDS

Colloidal graphite increases die life because of its stability at high temperatures, excellent lubricating qualities, and its ability to prevent adhesion and the scrubbing effect of hot metal. This cannot be said of conventional petroleum compounds which either decompose rapidly at temperatures above 300°F or do not possess the required lubricity necessary under good die casting procedures. It will not volatilize when in contact with the hot metal and cause pock marks due to gas formation. It will perform when present in extremely thin films which will not affect dimensions or cause discoloration of the parts being cast. And since it does not volatilize or otherwise be destroyed in the casting process, it does not need to be applied as often as other lubricants. This fact alone has often increased production as much as 25%. Investigate the use of an Acheson colloidal dispersion in solving your die casting problem . . . *It probably is the very answer you need.*

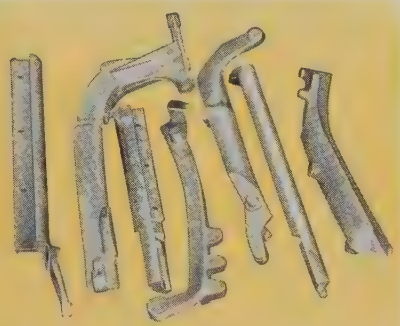
SUPERIOR CASTINGS, LONGER DIE LIFE ATTRIBUTED TO 'DAG' DISPERSIONS

Die casters and molders are expressing a growing preference for Acheson 'dag' brand colloidal dispersions. The consistent high quality of these products and the multiple benefits they offer have obsoleted most other mold cavity coatings. As outlined below, Acheson dispersions greatly aid in the manufacture of more uniformly sound castings having smoother surface finishes, facilitate metal flow and parting, and consequently extend the effective service lives of the dies and molds on which they are used.

Acheson 'Prodag'®, spray-applied on permanent molds at Paragon Aluminum Corporation, has given them consistently higher quality castings and fewer rejects.

Better surface finish with 'Prodag' permanent mold coating is just one of the reasons why Paragon Aluminum Corporation, a Division of Detroit Harvester Company located at Monroe, Michigan, switched to this Acheson product. After four years of experimentation with other mold washes, Paragon chose 'Prodag' — Acheson semi-colloidal graphite in water — and has used it constantly the past seven years. The reasons for its choice are these; uniform consistency, excellent heat-transfer quality, and its hard, smooth, tenacious film which resists flaking and provides easier parting characteristics.

With about 95 per cent of its annual output of more than two million pounds of castings going to the automotive industry, Paragon must insist upon quality. 'Prodag' helps to maintain this standard. These parts for convertible automobile tops are precision-molded from both 355 and 319 aluminum alloy. Molds are preheated before each day's run to 600°F and the casting cycle maintains this temperature. The 'Prodag' dilution ratio is 1 to 4 parts water and is applied to the molds with a commercial spray gun. Aside from occasional touchup at points of greatest wear, this coating lasts through the entire run. Because of the physical contours involved in these comparatively small, light castings, they require rapid cooling in certain areas to insure uniform strength. The 'Prodag' coating — with its proven fast heat transfer ability — allows the castings to cool without breaks or pinholes. And by parting more easily, the high-finish castings which result have given Paragon Aluminum products wide acceptance in this demanding industry.



Typical parts cast at Paragon Aluminum include these automobile convertible top braces. More uniform strength, better finish, and fewer rejects result from this company's use of Acheson 'Prodag'.

If you have a metal casting problem, call in your Acheson Service Engineer. Or if you prefer, write direct for additional information contained in our Bulletin No. 425. Address Dept. S-59.

'dag' and 'Prodag' are trademarks registered in the U.S. Patent Office by Acheson Industries, Inc.

ACHESON *Colloids Company*

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.

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Automation's Taking Over In the Blast Furnace

By J. E. ORAM

Industrial Engineering Section
General Electric Co.
Schenectady, N. Y.

In the future, the blast furnace will be operated by a master control system, an expert says. Automation will permit close control of product quality. Pushbutton, paper tape, or punched card programing may be used; computers, given a charge material analysis, will determine the right amounts of raw materials to be put into the furnace. Needed: Better understanding of the blast furnace process and high speed equipment for recording and processing data.

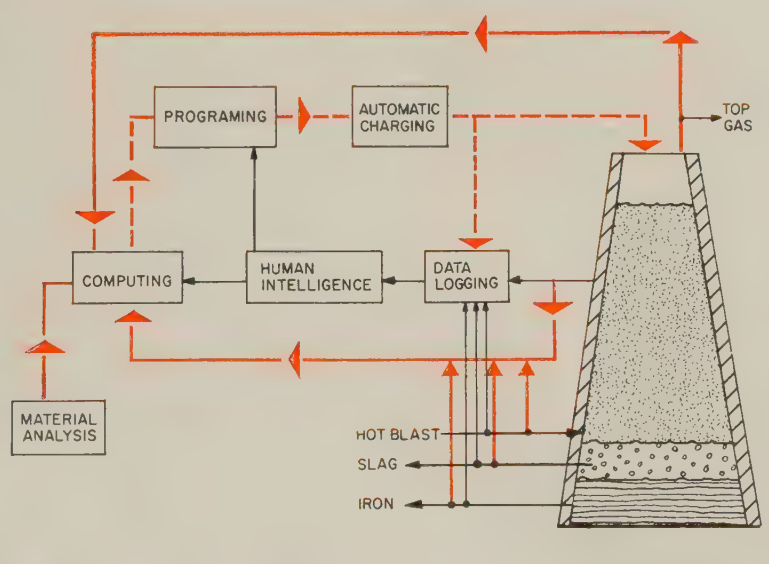
PROCESS control in the blast furnace isn't far away. Some operations are done automatically now, after they're initiated by an operator.

Goal: Make all operations automatic, with each starting as the one before it is finished.

• Automation would permit control of product quality.

Automatic charging, programing, computation of a chemically correct charge, and data logging are successive steps toward complete automation. Each, while offering its own benefits, is a logical step toward control of the whole process, not a random attempt to control an isolated phase.

With operations in the process tied together by a master control system, closer control of product quality would be assured.



Here's how automatic controls may operate the blast furnace of the future. Data collected from the furnace and charge material would be interpreted and fed back into the process control to vary quality or quantity of the product

• The charging operation has been made partly automatic. Complete automation should come in the next few years.

The blast furnace process is closer to complete automation than most others in iron and steel making. Example: The charging system has progressed from crude hand methods to automatic systems used on most modern, high capacity stacks.

Some basic elements of a modern charging system are the balanced skip hoist, the small and large bells and the stockline recorders. Also included: An automatic coke measuring and charging system, consisting of shaker screens, weigh hoppers with electrically operated gates, a water charging system, and a scale car, for charging ore and other raw materials. Those elements are coordinated by program control; the preset program is established by the furnace operator.

Automatic control has improved blast furnace charging, but inflexible operation of the scale car is still a handicap. Weighing is subject to human error. The completely automated charging system would include an automatic stockhouse system, where each material would be weighed or measured.

When a skip comes to the pit, program control would automatically actuate the conveyor system to load it with the right material. The charge material would then be hauled away and fed into the furnace automatically.

The charging system, started and stopped by the stockline recorders, would maintain a preset burden level in the furnace. Scale car operation and associated human error would be eliminated.

• Programing and automatic charging equipment used is optional; understanding of the blast furnace process is vital.

Pushbutton programing may be adequate for the automated blast furnace because of relatively infrequent changes in the charging

Coming: Automation of Steelmaking

Cost per ton of steel depends on the steelmaker's ability to make a high quality product in large quantities.

Automatic process control can boost output in iron and steel making areas, as it has in metal rolling and processing.

Blast furnace automation is a logical start; some operations are already automatic, after initiation by an operator.

Process control will help in the sinter plant, open hearth, soaking pit, oxygen converter, and electric furnace.

program. Punched card equipment for automatic reprograming, in response to a process computer, may be used.

Lack of understanding of complex thermal and chemical reactions in iron and steel making often hinders development of automatic process control. Steelmakers have devoted much of their research effort to better understanding of the blast furnace. Some of the more fundamental process equations may already be known, but more must be learned before the blast furnace product can be controlled automatically.

• **Periodic computation of the correct burden will make the furnace more stable, efficient, and predictable.**

Before long, we can expect to see automatic computation of the charging program. The system would be reprogramed periodically to maintain a chemically correct charge. It's possible now, with modern industrial computers.

Some steelmakers feel they have enough knowledge to write the required equations and define chemical relationships. Needed: A more precise, mathematical definition of present burden calculations.

How often computations would be made would depend mostly on the rate of change in raw material composition. The computer would require raw material analysis methods that could provide accurate data in a hurry. Commercial equipment isn't available yet, but on-line x-ray analysis instruments are being developed.

A chemically uniform charge would improve stability, efficiency, and predictability of the furnace, but the process control loop is still an open one, where functions are initiated by a human operator.

Some of the easily identified local feedback loops may be closed soon, taking part of the human factor out of the process. But first, complex process relationships and their time correlations must be better understood. A careful correlation study, designed to develop controlling process equations, may supply the answers.

• **Needed: Accurate process data in a form that lends itself to high speed reduction and study.**

Process data are often taken with round chart or strip chart recorders. They can't be processed rapidly in those forms. They lack accurate time correlation of variables.

Many variables, not fully understood, should be recorded to prevent loss of significant information. High speed data loggers, collecting information on a large number of variables on a frequent, periodic basis, can record that type information. They're also used in determing production costs, maintaining inventory control, and detecting abnormal conditions.

What's in the Works For Wire Rope Users

SOME new things are in the making for users of wire rope.

Here are some of the product developments of the research laboratory at Union Wire Rope Corp., a Kansas City, Mo., subsidiary of Armco Steel Corp.

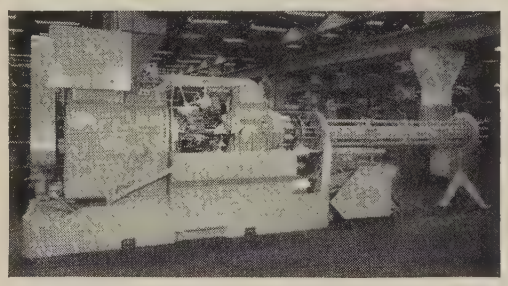
• **Higher strength balanced wire ropes.** High strength alone is not the answer for maximum service, the company declares. Needed are specially designed balanced ropes. Such ropes are undergoing field tests. The plan is to make them available for all uses.

• **Improved plastic cores for wire rope.** Union Wire Rope is working on plastic cores for wire rope for use in corrosive media. The plastic, designed to replace fiber cores, must have sufficient heat resistance and compressive strength.

• **Improved lubricants for wire rope.** The company is striving for better lubricants where the rope undergoes extreme pressures. Needed is an economical lubricant that has affinity for steel and gives longer rope service, both as a lubricant and as a preventive against rust.

• **Better prestressing techniques.** It is working to improve end anchorages for prestressed concrete so that fieldwork will be reduced.

• **Several new complete lines of slings.** Hand braided slings with plastic seized eyes are ready for field use. Ultraflexible slings with mechanical splices utilizing nonferrous ferrules are proving interesting to the company.



Acme-Gridley, 1¼" RB 8 producing 690 nozzle bodies per hour

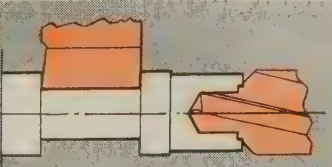
Close-up of tooling zone showing 5th, 6th and 7th position

ACME-GRIDLEY ELIMINATES SECONDARY OPERATIONS...

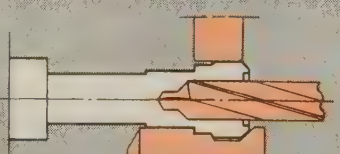
for Eagle Manufacturing Company

- Direct Cost Reduced 48%*
- Production Time Reduced 64%

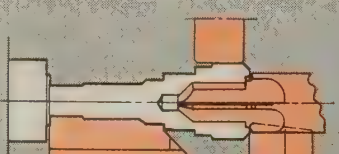
* Details on request



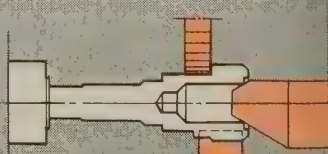
8. Feed out—rough form rear diameter—counterbore and drill large hole part way



1. Form two front diameters and chamfer head—drill large hole remainder—support



2. Form two rear diameters—ream large hole—face end—support



3. Stop spindle rotation—mill flat—support

NATIONAL ACME'S
"ZONE OF RESPONSIBILITY"
INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS...Then Check National Acme

As a part of a continuing contribution to all phases of cost reduction, National Acme engineers initiated the development work necessary to effect important savings for this 65 year old Wellsburg, W. Virginia company.

The aluminum nozzle body of their hydraulic pump oilers formerly had been produced on a six spindle automatic and two other machines performing secondary operations. Visionary machine tool engineering made possible the application of spindle stopping and positioning on an eight-spindle Acme-Gridley to complete the entire piece *in the primary set-up . . . and increase net production.*

Advanced design and development such as this, together with wide open tooling zones, independently operated tool slides and the extreme accuracy and flexibility of direct camming . . . makes possible the solution of "unusual" jobs an "every day" occurrence at National Acme.

Write or ask one of our representatives for the complete story on the industry's most modern approach to *your* cost reduction problem.

Direct Costs: these include direct dollar savings as realized by the Eagle Manufacturing Company . . . an "every day" job for Acme-Gridleys.

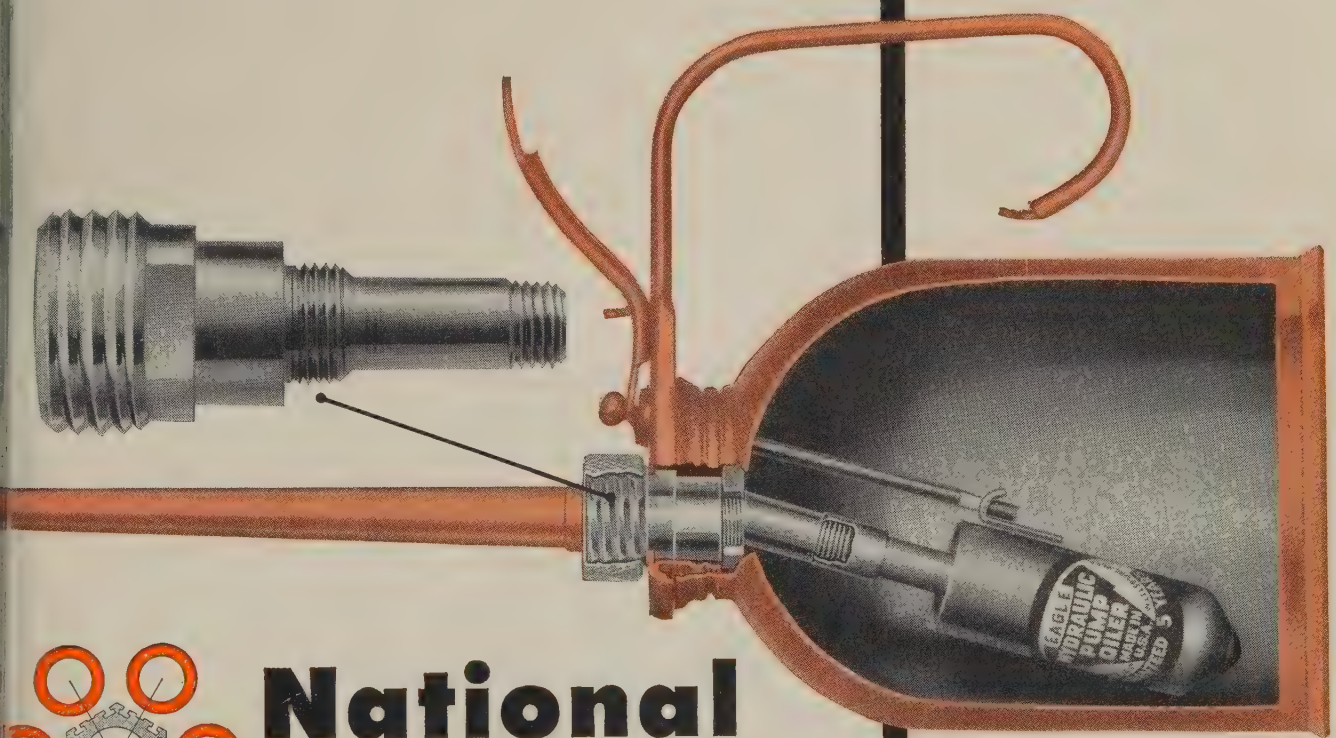
Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

Product Redesign: teaming with *your* design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.



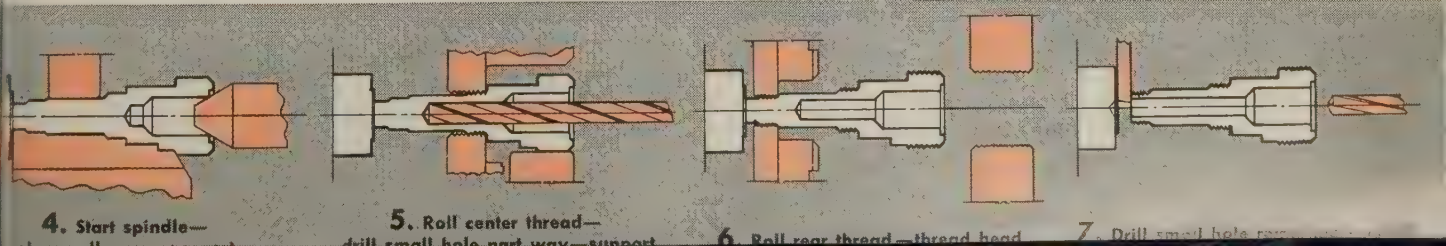
National Acme

The National Acme Company
189 E. 131st Street
Cleveland 8, Ohio

Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.

Pioneer in Circumferential Automation

15 Operations in 5.5 Seconds



4. Start spindle—

5. Roll center thread—

6. Roll rear thread—thread head

7. Drill small hole rear

Tips from Missilemakers Can Cut Your Costs

1. Cutter with hula movement puts compound contours in honeycombs. Rigid fillers aren't needed.
2. Honeycomb is being brazed with a resistance electric blanket. In one case, brazing and heat treating time is down from 34 to 13½ hours
3. Chemical milling cuts weight of missile fuel tanks.

COMPOUND CONTOURS can be machined in honeycombs by a method that does not require fillers, says Martin Co., Baltimore. Both male and female compound contours can be produced.

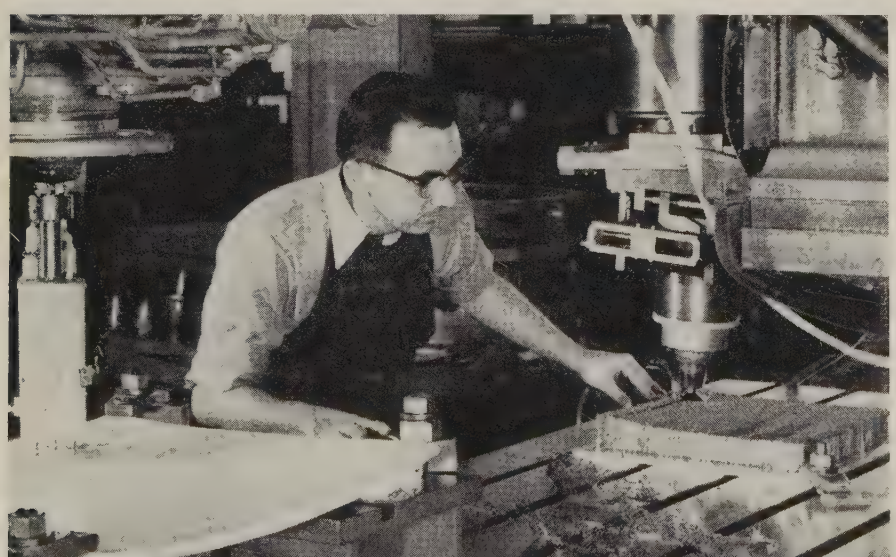
Martin uses a standard, three axis controlled cutting machine with a newly designed portable head. A modified stylus converts the cutting to a five axis operation.

The stylus has five pickup points. Rise, fall, and tilt are transmitted to the cutter head from a wooden or plaster model.

The head can tilt ±10 degrees in two directions perpendicular to each other. The center line and the end of the cutter have a common focal point.

Tracer controls are a combination of pneumatic, hydraulic, and electronic components. Power is supplied by a 12,000 rpm air motor.

Martin's Carlton B. Jenkins is the inventor.



A modified stylus with five pickup points (left) converts a standard three axis cutting machine to five axis operation. The stylus rides the surface of the model and transmits rise, fall, and tilt motions to the cutter head

• The resistance electric blanket is being used in brazing honeycomb.

An electric blanket brazing fixture with heating elements and cooling system has been developed. Tools hold and apply pressure to the component being brazed.

With precipitation hardening alloys, the brazing and heat treating cycle takes 13½ hours instead of the 34 hours required by conventional furnace brazing methods.

The blanket develops little heat loss and is about 65 per cent efficient vs. 10 per cent for the brazing furnace.

• Chemical milling techniques mean significant weight savings in ICBMs.

Eight aluminum panels (2014 alloy) lose 10 lb each during fuel tank manufacture. Forming usually requires sections of metal thicker than structural requirements indicate. It provides for material flow during the forming process.

Martin predicts this process will be extended to the fabrication of high strength, heat resistant steel structures.

Payoff Quick on Unit That Saves Welding Powder

A vibratory feeder and a magnetic grate can pay their way in two weeks in reclaiming hard surfacing welding powder.

Iron contaminated powder is poured into the sieve. High speed vibratory action of the feeder filters the powder through the sieve.

The feeder tray then passes the powder to the magnetic grate to separate the iron from the powder.

Reclaimed welding powder is clean and ready to use. Fine iron accumulations are periodically removed by lifting the covering grill and wiping the tubes with a cloth.

The units are made by Eriez Mfg. Co., Erie, Pa.

Transfer System Is Fast, Flexible

his automatic system mills, drills, chamfers, and taps ast iron or aluminum cylinder heads in three sizes. processes 38 to 44 heads an hour, and can be changed uickly from one head size or design to another. Lift nd carry transfer method prevents scratching and scuff- ng of machined surfaces. The control system permits ll speed production, using two operators, or slow speed peration, using only one.

EED an automatic transfer and achining system, adaptable to arts of different sizes and mate- als? You may be interested in e Cross Transfer-matic, made by e Cross Co., Detroit.

The versatile unit machines the ds of two, three, and four cylin- r heads for two cycle, in line, esel engines. It processes cast n heads, 12 to 24 in. long and ll be adapted for aluminum parts.

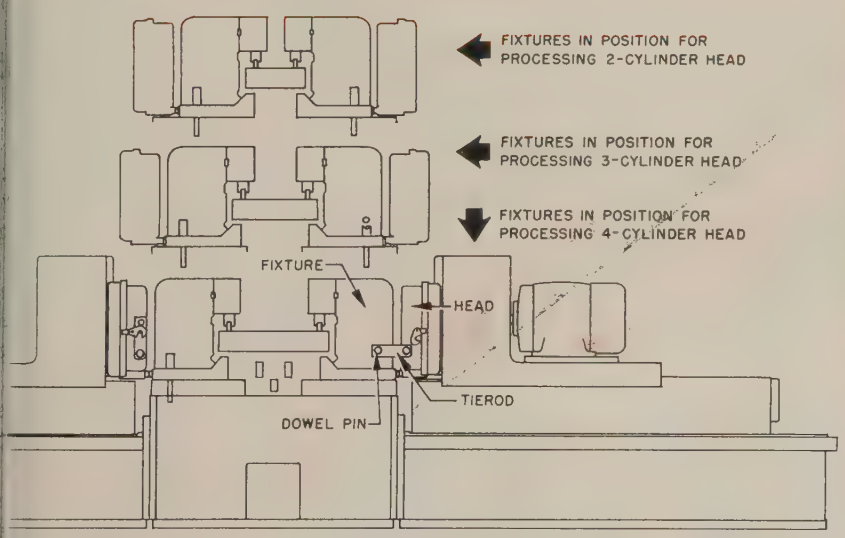
• The machine combines high output with product flexibility. It can be adapted quickly to a given head size or design.

At top speed, it turns out 38 to 44 heads an hour, depending on head size and the method chosen for deep hole drilling at several stations. It face mills oil and fuel hole bosses, or water outlet pads, on three planes. It drills, chamfers, and taps all oil, fuel, and screw holes. It also air tests each head for casting density.

Two single spindle, quill type drill units chamfer oil gallery holes. Each unit is mounted on a revolving drum plate and swivels automatically from one hole to another without reorienting the part.

Fixtures and components can be repositioned to process any cylinder head in 4 hours. Tierods that connect fixtures to machine units are relocated, and machine units are advanced or withdrawn to accommodate the heads being processed. Dowel pins, inserted manually into locating holes on each side of the fixture base, hold it in position.

At several stations using single spindle drill units, air test mechanisms, or tap heads, fixtures are repositioned by a manually controlled, hydraulic cylinder. Minor changes of feed dogs and tools complete the setup.



utomatic transfer and machining line processes heads for two, three, and four linder engines. Fixtures and components are repositioned when head size changed

• Features incorporated in the system to machine aluminum heads are useful in processing cast iron parts.

A central chip disposal, coolant, and filtration system removes chips. Optional woodpecker drilling mechanisms remove chips in deep hole drilling and make for higher quality finishes.

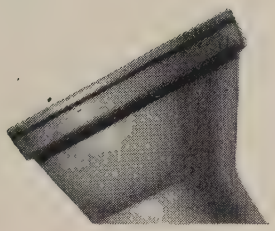
A lift and carry transfer system eliminates scratching and scuffing of precision locating surfaces, usually associated with other transfer methods. It improves quality control in machining cast iron parts and will be even more important in processing aluminum ones.

• The control system permits operation at partial or full capacity and allows more economical use of manpower.

When the machine is operated at partial capacity, the operator loads parts until every station is full, switches control location to the unload station, and unloads parts until the machine is empty.


FOR THE MACHINERY PAR

THAT TAKES THE BEATING



HAYNES Alloys *will do the job!*

Perfect performance for 100,000 hours at orange heat, in the combustion chambers of diesel engines, is quite an achievement. Yet it's the record of tens of thousands of special combustion cups of HASTELLOY alloy C in a well-known line of diesels.

The alloy was chosen for its unique high-temperature strength and corrosion resistance and its outstanding ability to hold heat.

These and other special properties are built into HAYNES alloys —to fit the particular needs of design and production engineers for machinery parts that must meet the roughest service conditions.

If you are designing such a part, investigate HAYNES alloys. There are more than 15 to choose from. They include HAYNES STELLITE cobalt-base alloys, HAYNES iron-base alloys, HAYSTELLITE cast tungsten carbide, and HASTELLOY nickel-base alloys. They are available as castings, forgings, completely fabricated parts, or as sheet and bar stock. All parts can be furnished machined or ground to specified size and finish.

HAYNES ALLOYS

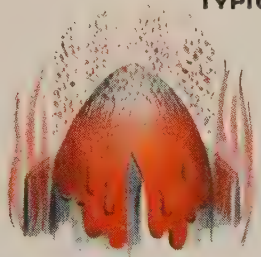
HAYNES STELLITE COMPANY
Division of Union Carbide Corporation
Kokomo, Indiana

UNION CARBIDE

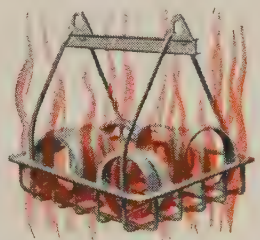
Address inquiries to Haynes Stellite Company, 420 Lexington Avenue, New York 17, N. Y.

The terms "Haynes," "Haynes Stellite," "Hastelloy," "Haystellite," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

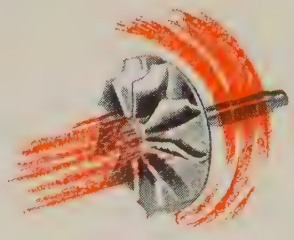
TYPICAL "HAYNES" ALLOY PARTS THAT RESIST...



ABRASION. Ten times the life and still no sign of wear, is the record of this plastics-extrusion torpedo nose made of HAYNES STELLITE alloy No. 3. This is one of many HAYNES wear-resistant alloys.



CORROSION. Baskets made of HASTELLOY alloy C used for holding forgings during acid treatment, are still good after 15 months of service. Materials formerly used were replaced every month.



HIGH TEMPERATURE. Turbine wheels in the "hot" ends of diesel engine turbochargers are investment-cast of HAYNES STELLITE alloy No. 31, for service at speeds up to 50,000 rpm. at 1500 deg. F.

By C. BROWN & J. F. EINLOTH
Gearing Div., Westinghouse Electric Corp., Pittsburgh

Throwaway Cutters Save $15,596 a Year

A highly organized program at Westinghouse integrates the new tools into the plant in three months

EXPENDABLE tooling, a big item of expense in metalworking, is program controlled at Westinghouse Electric Corp.'s Gearing Div.

Analysis of our small-tool expense account showed that expenditures for brazed, single point tools and their maintenance were large. A detailed plan, simple but concise, guided the gearing division through the changeover to throwaways in less than three months. It ultimately provided the savings that were sought.

Here are the six steps used to change from brazed single point tools to throwaway inserts:

1. Determine the feasibility of changing to throwaways, from the standpoint of cost and quality of the work produced.

2. Determine the organization required to implement the program.

3. Review present cutting tool systems.

4. Determine the area where the program should be introduced.

5. Establish schedules for the program.

6. Provide controls to insure the continued success of the program.

• First step was to conduct a feasibility study that would predict the savings.

Statistical and technical data from industrial engineering, augmented by data furnished by purchasing, revealed that a saving of $0.155 per standard hour could be realized on turning. Further, it was shown that we could at least maintain our work quality.

Responsibilities were delegated. The chairman's duties included coordinating and scheduling the program, plus the task of issuing interim and final reports.

An industrial engineer was responsible for planning, cost comparisons, cost analyses, program procedure work, and final financial and program writeups.

Our tool application engineer was responsible for soliciting (through purchasing) the assistance of suppliers and for determining which machined items and facilities lent themselves to throwaways. He was also responsible for initiating all paperwork pertinent to procurement of tools, tips, and spare parts, the education of personnel, the application of tools, recording of performance, and policing of the program. His was the only full time job on the project.

• A thorough review of present systems of tool buying, stocking, use, maintenance, and disposal got the program underway.

Tentative schedules (outlining target dates for facilities to be surveyed, equipped, and followed up) were prepared.

As soon as the plan was approved, these steps were taken to get it into action:

1. Three men were selected to fill the committee jobs.

2. Venders were called in.

3. Supervisors were told about the program.

4. A test area was chosen and trial applications made.

5. Trial performance was measured and compared with estimates.

6. Steps 4 and 5 were repeated as long as applications were justified.

7. A control system for the new tooling method was established.

Numerous suppliers were contacted. The one offering the greatest application assistance (price and quality being competitive) was dealt with on an exclusive basis. This eliminated confusion and resulted in maximum use of the supplier's knowhow.

The new concept of tooling was discussed with members of supervision during the second week. The potential of the tool and the importance of a fair trial were stressed. At this meeting, the test area was selected and the introductory steps started.

Four days after the initial study, the first set of tools was put to work. Results of this and later applications were carefully observed and recorded by the tool engineer. At the completion of this project, over 200 throwaway toolholders were working effectively.

• Six months after the start of the

How It Worked

Figuring that they could replace half their carbide tools with throwaways, Westinghouse production men estimated their savings. After the new tools were in use, a cost study showed how close the estimate was.

Preliminary Estimate

(Based on 28,184 standard hours)

1. Assume all tools are brazed:

Number of tools dulled		**8,275**
Average standard hours per tool dulled		**3.406**
Cost of tools over a ten-regrind life		
Original average cost	$4.00	
Grinding labor	6.632	
Grinding wheels	1.265	
Ten-regrind cost	$11.897	
Tool cost per grind		**$1.19**
Tool cost per standard hour ($1.19 ÷ 3.406)		**$0.3493**

2. Assume half the tools are throwaways:

Cost of 4,138 brazed tools dulled at $1.19 per edge	**$4,924.22**
Cost of throwaway tools dulled (at an estimated cost of 20 cents per cutting edge, and allowing a tool life 150 per cent that of brazed tools because of precision grinding.)	**$ 551.66**
Total tool cost per standard hour	**$0.1943**

3. Estimated Annual Savings:

$0.155 per standard hour, at 110,000 standard hours a year	**$17,050.00**
Salvaged tool savings	**1,030.86**
Total estimated annual savings	**$18,080.86**

Production Record

(Oct. 6 to Dec. 29, 1957)

Cost of brazed tools per standard hour	**$0.1616**
Cost of throwaway tools per standard hour	**0.0757**
Total tool cost per standard hour	**$0.2373**

SAVINGS

$0.112 per standard hour, at 108,000 hours estimated for the year	**$12,096.00**
Salvage tool savings	**1,250.00**
Waiting time savings	**1,300.00**
Special grinding savings	**950.00**
Total annual savings	**$15,596.00**

program, a calculation of savings showed a $15,596 annual return on the three-month investment.

In addition to the cash savings in tooling costs, we found that: Our productivity was up because of the precision grinding and quick indexing; our inventory of tools was reduced because throwaway holders have a longer life than the brazed shanks, and most of the inventory is in the small tips; savings in overhead accrued from the reduced need for tool grinding capacity, as well as stores handling and forms processing.

The control, designed to insure the continued success of the program, uses a working ratio between the number of single point tools maintained and the standard hour incurred. This ratio is then compared with the predetermined control ratio figure.

Ultrasonics Weld Foil, Reduces Handling, Scrap

Ultrasonic vibrations are being used to join aluminum foil ends while the metal is traveling through the mills. The welds are neat, strong, and eliminate downtime, says Aluminum Co. of America, Pittsburgh.

One large user estimates that Alcoa's product will save his firm up to $100,000 a year by reducing handling and scrap.

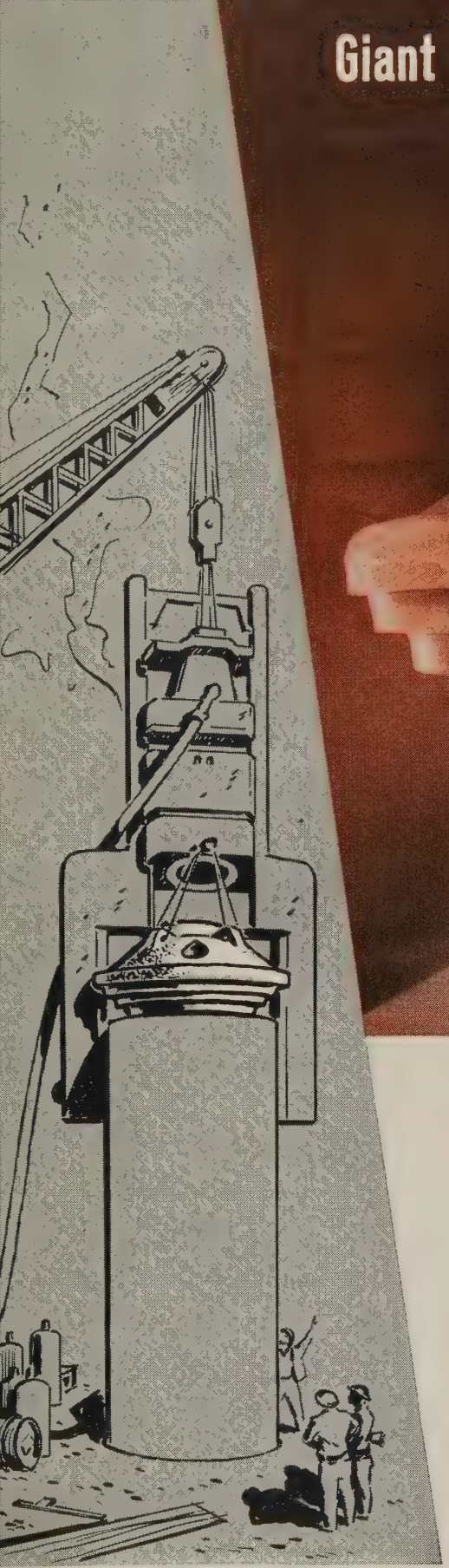
One Alcoa mill has equipment to splice foil up to 38 in. wide. Splicers soon to be installed at other locations will handle greater widths.

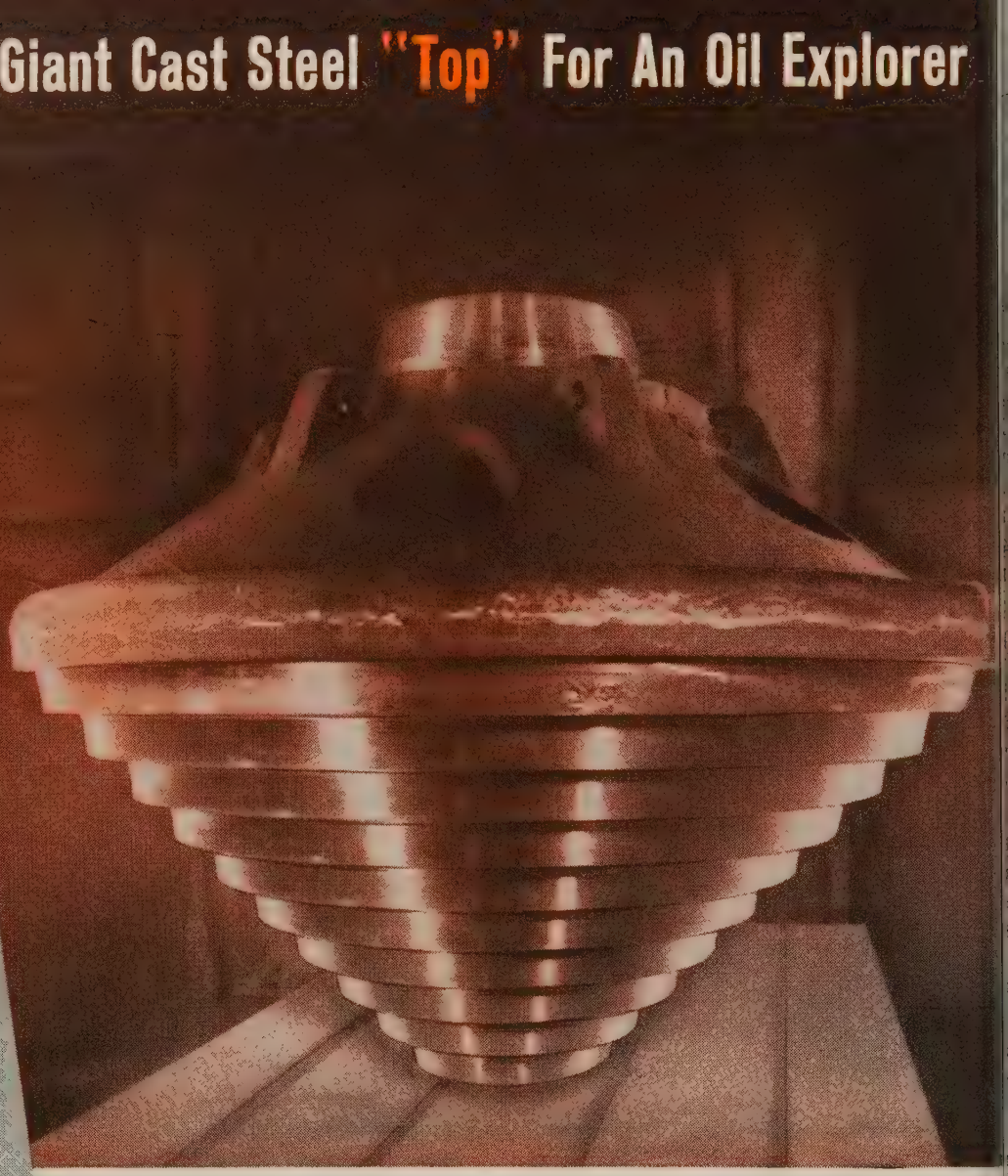
• **Method**—Foil is joined by subjecting it to vibrations of 50,000 cps. The energy fractures the natural oxide film on the foil, and a true metallurgical bond about 3/32 in. wide is formed. It is about as strong as the parent metal.

The splice will not tear adjacent layers of foil and will run smoothly through coating or printing machines. It forms an excellent moisture barrier.

The welding technique is a joint development of Alcoa and Aeroprojects Inc., West Chester, Pa. Aeroprojects markets its Sonoweld line of metal joining equipment through its subsidiary, Sonobond Corp.

Giant Cast Steel "Top" For An Oil Explorer





If this 17,540 pound cast steel pipe cap were not used to set string of oil well casing, it could be mistaken for a gigantic spinni top. Either way, here is visual proof of the diverse requirements f industrial steel castings which are satisfied by the experienced e gineers, metallurgists and skilled foundrymen of Erie Forge & Ste Corporation. From the open hearth melt through the machining oper tion to the shipping dock, close quality control is our prime concer

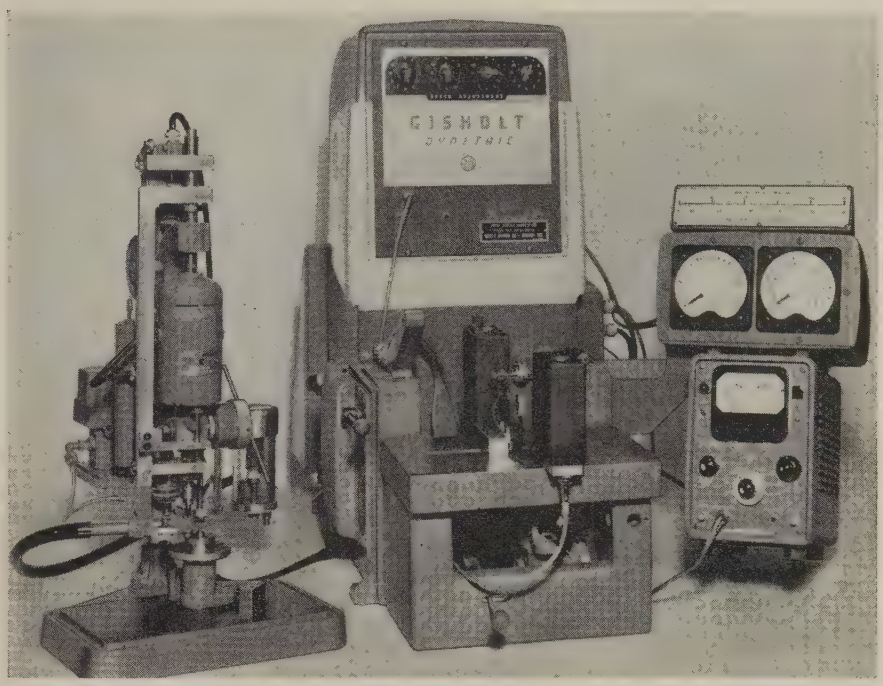
Erie Forge & Steel for many years has been making Steel Cas ings for rolling mills, cement mills, blast furnaces, presses, forgi hammers, power turbines, ships, oil field production equipment an heavy industrial machines.

You can depend upon us to meet your most severe steel castin and forging requirements.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

Miniature Rotating Parts Balanced Easily



VIBRATION in miniature, high speed, rotating parts or assemblies can be eliminated easily without skilled personnel by using a new Gisholt bench type balancer, which requires no special mounting. The unit handles work such as miniature armatures, aircraft and missile gyros, small spindles, turbines, and textile parts.

Unbalances causing work support movements greater than 0.000002 in., with the work rotating at any speed between 1000 and 7000 or between 4000 and 12,000 rpm, can be quickly and accurately measured and located.

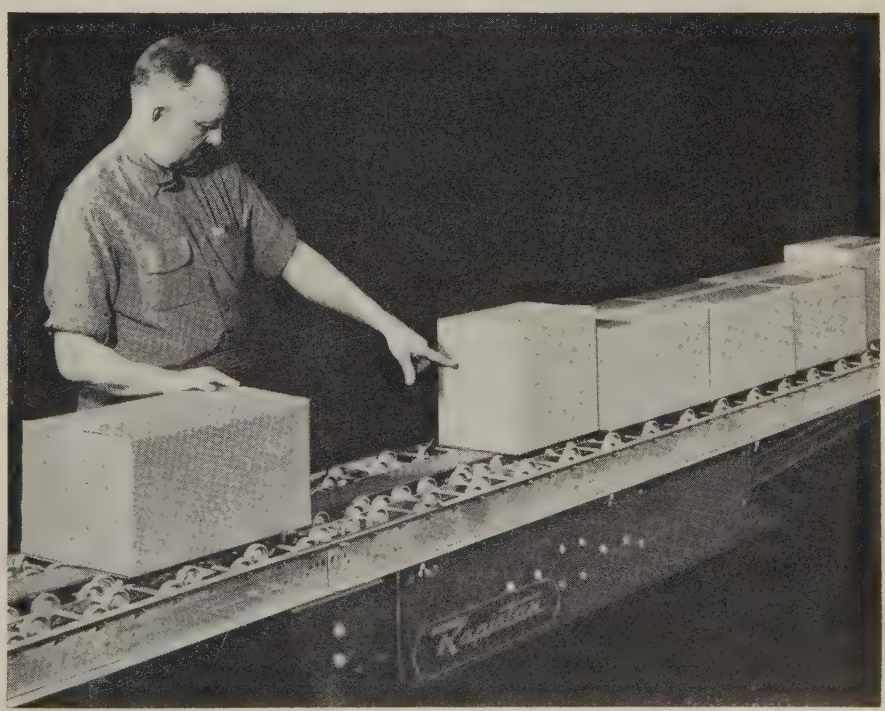
Accuracy is not affected by extraneous vibrations or electromagnetic disturbances, including those set up by electrically self-driven assemblies.

The balancers are designed for fast setup over a wide work range and special tooling for any job is simple and inexpensive. Optional equipment includes special work support fixtures for air or electrically self-driven parts; a photocell unit that can replace the standard strobe lamp; and an automatic speed control package for air driven parts.

For more information, *write* Gisholt Machine Co., 1245 E. Washington Ave., Madison 10, Wis.

Pressure Sensing Conveyor Eliminates Jackknifing

ACCUMULATED carton line pressure, slug loading and carton jackknifing are minimized by the Rapitan pressure sensing conveyor. The A-P-C unit is a wheel conveyor with a 4 in. belt replacing the center load-bearing wheels of the equipment.

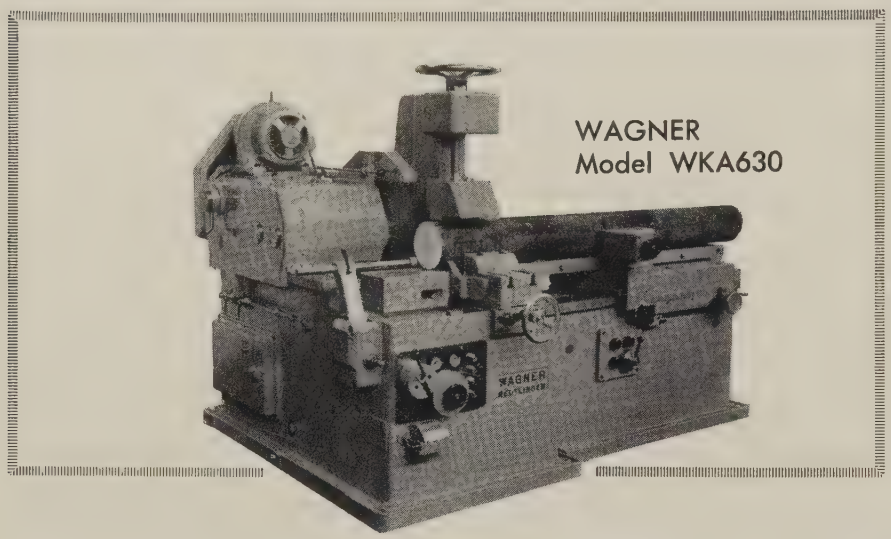


Pressure sensing characteristics of the conveyor result from an effective system of trigger wheels linked with pressure wheels. Through these wheels, optimum belt pressure is delivered to cartons of varying weight for movement. Pressure is removed from the cartons when accumulation is required.

The trigger wheels and pressure wheels combine to raise and lower the belt so that motion can be imparted when the belt is raised to come in contact with the bottom of the carton. When the pressure

48 Models of Cold Saws to Meet Your Requirements

WAGNER, WITH A COMPLETE LINE OF SEMI-AUTOMATIC, FULL AUTOMATIC, HIGH SPEED AND SPECIALIZED MODELS, COVERS THE ENTIRE FIELD FOR MODERN COLD SAWING OF MACHINEABLE METALS



WAGNER
Model WKA630

Here is a fully automatic hydraulic cold sawing machine that gives peak production continuously.

ALBERT KLINGELHOFER MACHINE TOOL CORP.

Kenilworth, New Jersey

There's a Satisfied Customer back of most orders for

Diamond Perforated Metals

Naturally, we're always glad to make new friends and open up new accounts but, more and more as time goes on, the greater part of our business comes from concerns that have dealt with us before—some of them for nearly half a century.

One Reason is because they have learned that Diamond Perforated Metal Products are always reliable and our charges in line with competition of comparable quality. Another Reason is because our facilities are so complete, and our stock of dies so extensive, that almost any demand for perforated metal sheets, plates or parts can be taken care of promptly, accurately and economically.

ALL inquiries receive prompt attention. Illustrated catalogs give helpful working data—show many modern applications—enable you to select the best pattern for any purpose.

DIAMOND MANUFACTURING CO. WYOMING (Wilkes-Barre Area) **PENNA.**

New Bulletin No. 47, describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.

wheels are lowered, the belt drop away from the carton which the rests only on the gravity whee that make up most of the bed widt of the conveyor.

Accumulated cartons can be sep arated with fingertip pressure fo removal or insertion of a single ca ton.

For more information, *write* Rap ids-Standard Co. Inc., 342 Rapista Bldg., Grand Rapids 2, Mich.

Cutting, Grinding Fluids

A WATER emulsifiable cuttin fluid and a synthetic grinding com pound have been introduced b L. R. Kerns Co.

Said to be suitable for all cuttin operations, the SCF-3207 oil bas cutting fluid contains high percent ages of extreme pressure and anti weld additives. It will not caus dermatitis and will not turn rancid

The Kerns SGC-6560 grindin and cutting compound has extrem pressure properties and leaves a oily film on the work. Transparen and nondrying, it produces work that appears clean, but provide good rust protection and lubrication It will not dry out, will neve cause binding, or impair operatio of machines or machine parts.

For more information, *write* L. R. Kerns Co., 2659 E. 95th St., Chicago 17, Ill.

Variable Speed Drive Is Shaft Mounted

THE SHAFT mounted design of the Sterling mechanical variable speed drive is the most simplified and most efficient method of mounting, says the manufacturer. It eliminates all intermediate transmission elements, such as couplings and sprockets.

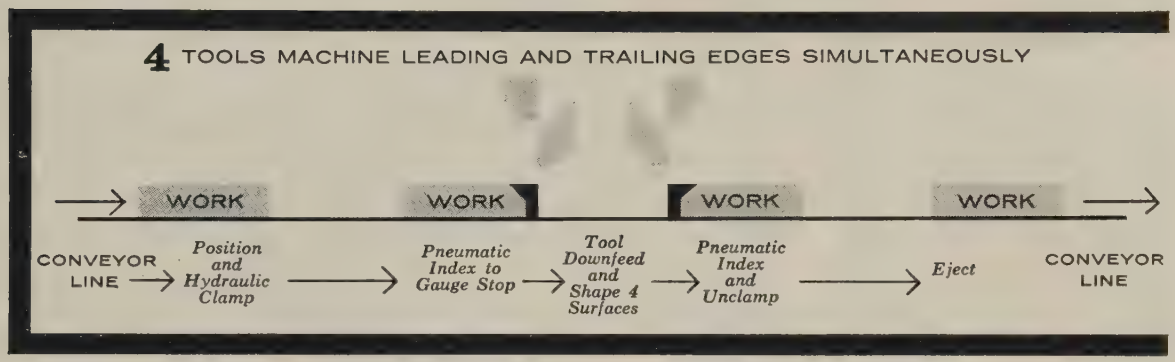
The drive has been designed for variable speed applications where space limitations dictate that the output shaft be at right angles to the transmission. It is especially adaptable to applications requiring controlled speed in a light, compact power drive.

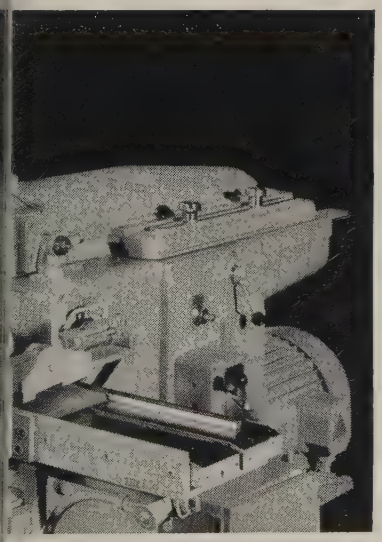
Available in dripproof or totally

(*Please turn to Page* 172)

COMPLETE AUTOMATIC CYCLING ON ROCKFORD

HY-DRAULIC SHAPER PRODUCES CONTINUOUS FLOW OF PARTS FOR CONVEYOR-LINE PRODUCTION . . .





Believed to be the first automatic shaper built, this standard 24" shaper with special tool head and cross-rail has been adapted to conveyor-line operation by arranging completely automatic cycling, including loading and unloading.

With this new method, many types of flat plates may be machined accurately and efficiently at high production rates, saving costly cutting tools and extra fixturing expense.

Four standard high speed steel tool bits with identical grinds are used to finish one vertical and one angular surface of each of 2 pieces simultaneously, as shown in diagramatic sketch of the automatic cycle. The machine features pneumatic index, hydraulic positioning and clamping, and positive mechanical feed. Operation is continuous until machine is stopped by operator, or automatic safety devices reject the cycle sequence.

This type of automatic machining has many variations, using Rockford Hy-Draulic Shapers. If you have high output requirements for work which lends itself to this type of machining, send us blueprints for estimates and recommendations.

h HYDRAULIC

ROCKFORD MACHINE TOOL CO.
2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

INTRODUCING...

NOW...
select from a complete range of capacities and speeds...1/8 to 2 tons and 8 to 60 fpm.

important new models of the Lodestar® electric hoist

NEW MODELS in 1/2, 1 and 2 tons

LODESTAR FEATURES INCLUDE:

- Safe, Heavy Duty Performance
- Lowest Headroom
- Push Button Control
- Fully Enclosed Components
- Self-Adjusting Magnetic Brake
- Ultra-Modern Electric Braking
- CM-ALLOY Flexible Link Chain
- Minimum-Maintenance Operation
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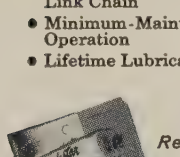

Request catalog and name of local stocking distributor.

LARGER CAPACITY and FASTER SPEEDS
...for speedier, lower cost materials handling

● Here's your opportunity to slash lifting and handling costs. Put these new Lodestars to work where their increased speeds and capacity match your maximum requirements. Many thousands already in service demonstrate that you, too, can benefit from more efficient handling, lowered costs and increased productivity.

CM HOISTS

CHISHOLM-MOORE HOIST DIVISION
Columbus McKinnon Chain Corporation
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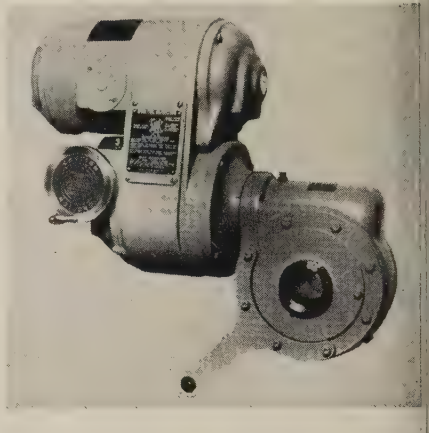
In Canada: McKinnon Columbus Chain Ltd., St. Catharines, Ont.



enclosed constructions, the ¼ to 3 hp units can be operated at 360 rpm to 5.2 rpm, and speed variations from 2:1 to 10:1.

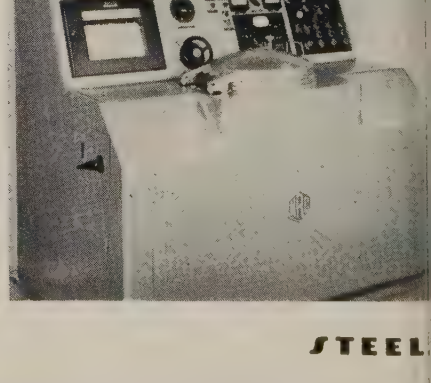
For more information, *write* Sterling Electric Motors, 5401 Telegraph Rd., Los Angeles 22, Calif.

Vacuum Furnace Has Production Capacity

HEAT TREATING, brazing, sintering, and testing of reactive metals and ceramics in the aircraft, electronic, nuclear, and metalworking industries can be done in the Model 2915 vacuum resistance furnace.

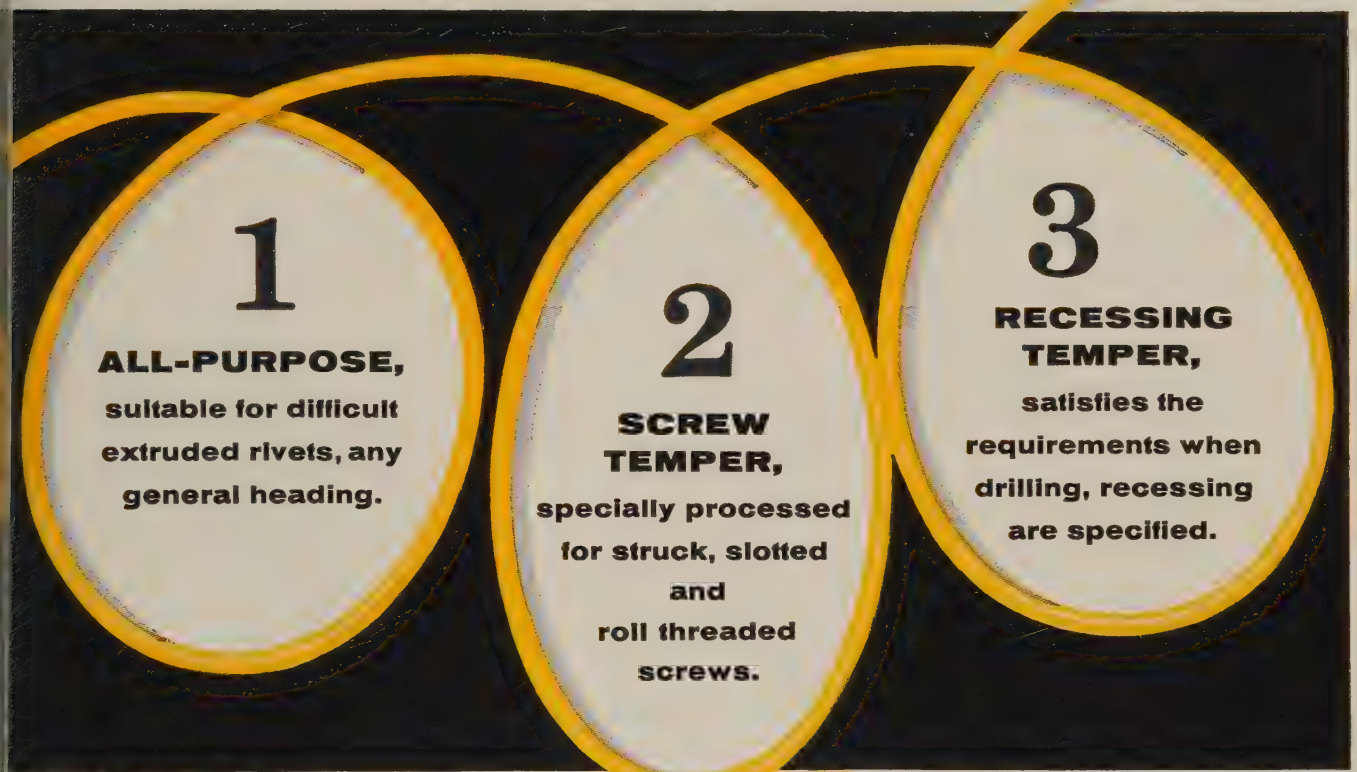
The furnace can operate at temperatures as high as 4400° F. It can be operated under vacuum, or under inert atmospheres. An extra large heating unit provides rapid heating (about 6 minutes) and cooling (20 minutes).

The entire system is designed for fail-safe operation. Vacuum valves are air operated and interlocked, and automatically shut off in case of power failure. All valves stay closed until the operator pushes a central reset button and restarts the me-



TRI-TEMP

means you can get ALL 3 TEMPERS in BRISTOL Extruded Heading Wire



Bristol offers three special tempers in cold heading wire and all of these tempers possess uniform flow characteristics.

What's more, you can get them in any of these five alloys: 87-13 . . . 90-10 . . . 85-15 . . . 70-30 . . . 65-35 . . . as well as in nickel silver and silicon bronze.

What are *your* requirements?
Just call LUdlow 2-3161.

The **BRISTOL BRASS CORPORATION**

Since 1850, makers of Brass strip, rod and wire in Bristol, Connecticut
Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse

AND FOR BRASS FORGINGS, TOO . . . ACCURATE BRASS CORP. (SUBSIDIARY OF THE BRISTOL BRASS CORP.), BRISTOL, CONNECTICUT.

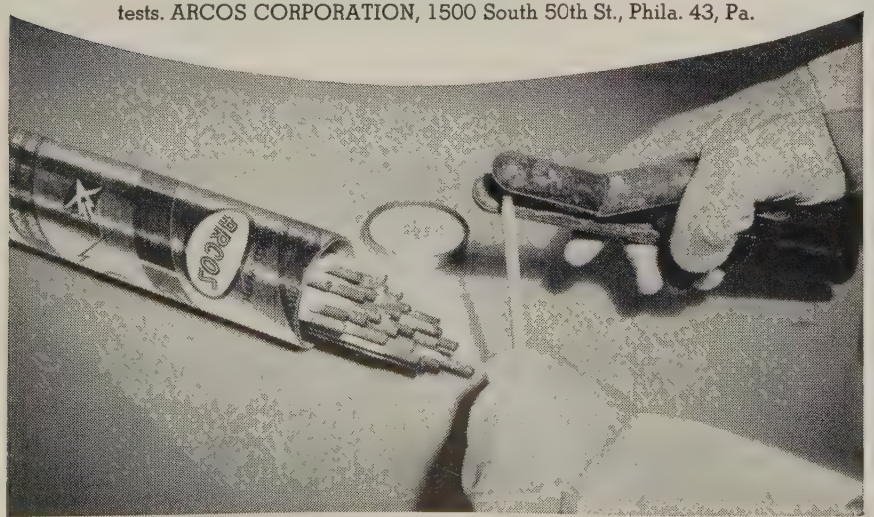
Job report courtesy of
Superior Welding Company, Decatur, Ill.

How to get more *positive* results when Welding Stainless

WELD WITH ARCOS

STAINLESS ELECTRODES

These vessels—used for processing a chemical where utmost product cleanliness is required—were made of 304 ELC Stainless Plate and welded with Arcos Chromend 19-9 CB (347) electrodes. The fabricator selected these electrodes for the "right" analysis to resist corrosion and to assure a surface, including the weld areas that would take a high polish both on the inside and outside to make thorough cleaning easy. It's proof again that whatever the job demands Arcos quality weld metal will meet all the required tests. ARCOS CORPORATION, 1500 South 50th St., Phila. 43, Pa.



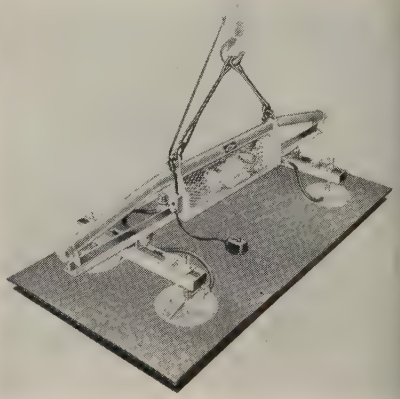
chanical pump. Furnace heat and diffusion pump heat are cut off if water fails.

For more information, *write* NRC Equipment Corp., 160 Charlemont St., Newton 61, Mass.

Vacuum Lifter Automates Plate-Sheet Handling

SHEET and plate steel weighing up to 4000 lb can be handled easily with a self-contained vacuum grapple.

The unit consists of a tubular strong back which also acts as a vacuum reservoir, an integral vacuum pump and motor, and rotatable cup arms which are adjustable longitudinally to accommodate various sheet or plate lengths. Each of the two arms carries two vacuum cups.



Interlocked controls provide a safe-to-lift light to indicate adequate vacuum. Instant release is accomplished by means of a push-button operated solenoid valve which cuts off the vacuum supply and uses the vacuum pump exhaust to blow the plate or sheet loose.

For more information, *write* Noble Co., 1860 Seventh St., Oakland, Calif.

Air Device Detects Missing, Broken Drills

FOR USE with multiple or single station automatic tooling machines, the Sheffield drill detector spots broken and missing drills before damage can be done and supplies

a signal for machine shutdown.

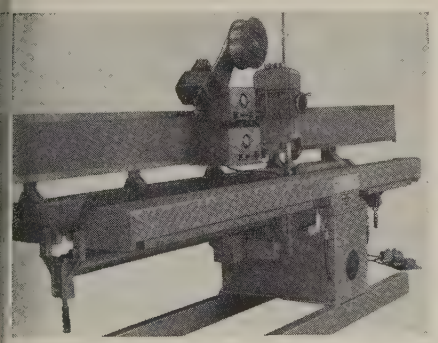
It is unaffected by dirt or coolant. The continuous jet of air blowing against the drill helps to keep the drill clean and free of chips. The unit can also be used to detect broken reamers, taps, and other types of tools.

The unit detects the presence or absence of a drill or similar tools by means of a stream of air flowing against each drill as the drill enters or is rejected from the workpiece. The broken or missing drill causes a pressure drop in the pneumatic circuit which initiates an electrical impulse to operate signal lights and relays.

For more information, *write* Autometrology Div., Sheffield Corp., Dayton 1, Ohio.

Twin Mandrel Seamer Has Automatic Welding Head

CONTINUOUS arc, maximum production, and operational utility of one automatic welding head and power source are accomplished in a line of opposed double mandreled seamers. Both holding and clamping mandrels utilize the same welding head.



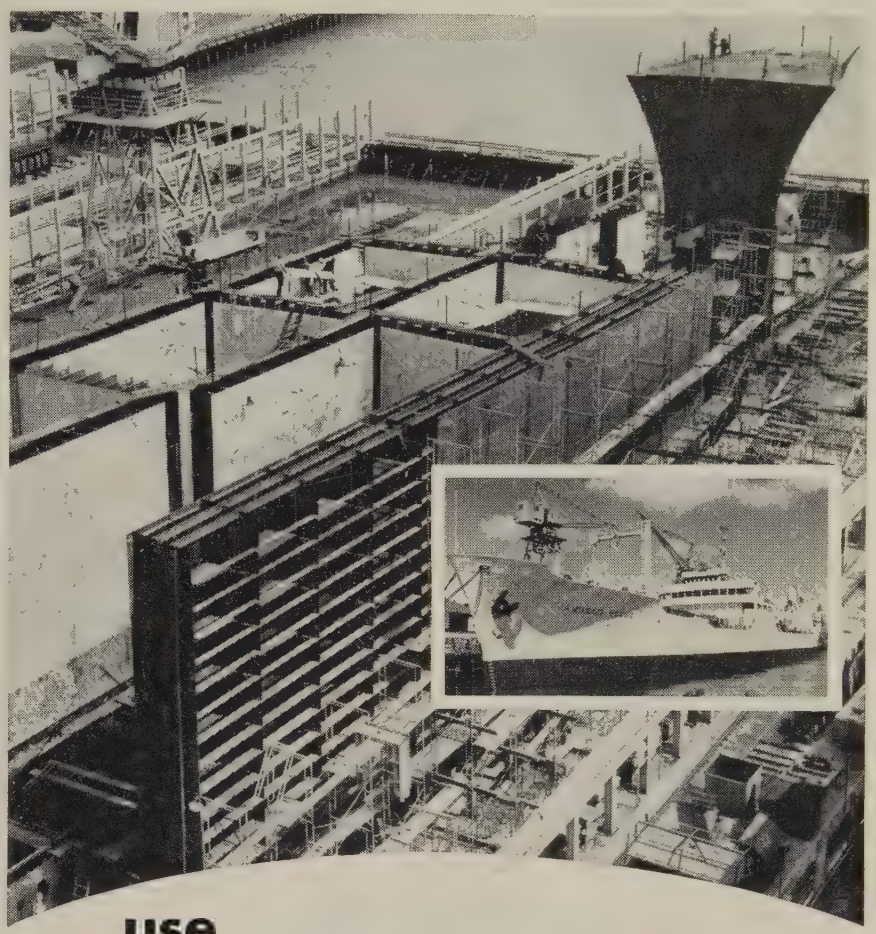
While the welding cycle is taking place on one side of the fixture, the next piece to be welded is being loaded on the opposite side. Production loss due to normal downtime for loading and unloading is eliminated.

For more information, *write* Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.

Ultrasonic Cleaning Tank

THE LARGE capacity, Blackstone ultrasonic cleaning tank has a highly efficient transducer that is air cooled and designed to radiate heat. In continuous operation, it will not

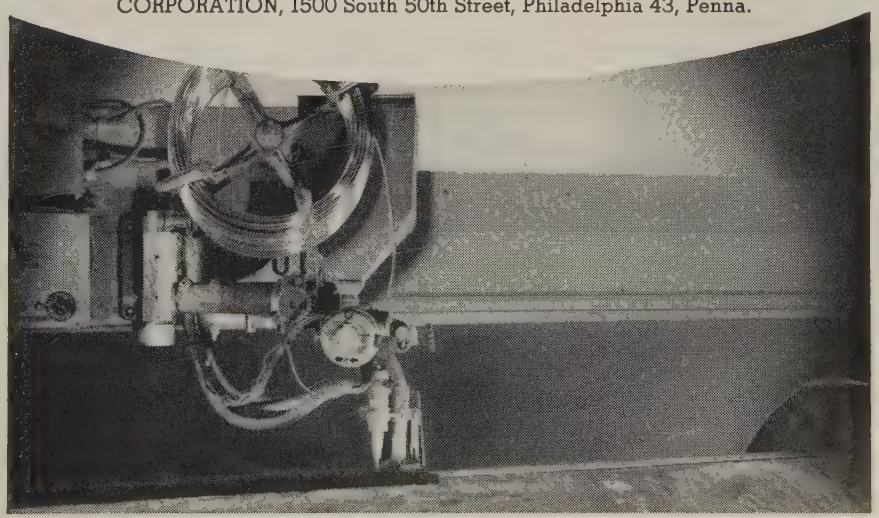
When submerged arc welding requirements are HIGHLY UNUSUAL!



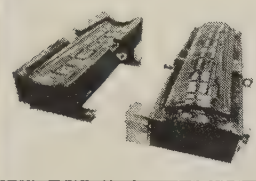
use

ARCOSITE BONDED FLUX

The SS Angelo Petri—the first of its kind—is a new wine tanker carrying 26 welded cargo tanks with a 2 million gallon bulk capacity. Especially unusual was the use of submerged arc welding on both sides of the type 316 stainless-clad steel tanks. ARCOSITE C-17 FLUX and Arcos CHROMENAR 25/20 bare wire were used to assure proper physical, corrosion resistant properties, and joint soundness. To control dilution on the stainless side, the clad side was automatically gouged slightly by carbon arc. Write today for information on ARCOSITE BONDED FLUXES and ARCOS STAINLESS and NICKEL ALLOY ELECTRODES. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Penna.

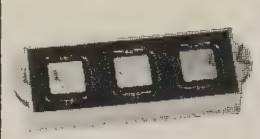


TOOL FABRICATORS



CASTING
MASS-CASTING
LAMINATING
SPLINING
CORE FABRICATING
VACUUM BAGGING
GEL COATING

PATTERN MAKING

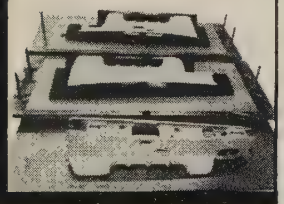


SPECIALISTS IN **PLASTICS TOOLING FORMULATIONS**

EPOCAST®
QUALITY CONTROLLED FORMULATIONS

furane plastics INCORPORATED
4516 BRAZIL STREET • LOS ANGELES 39, CALIF.

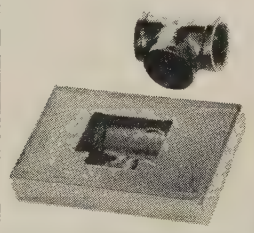
FOUNDRIES



Registered trade names:

- EPOCAST
- EPIBOND
- PLASPREG
- CALCERITE
- JET-KOTE
- EPOFILM

MACHINISTS



overheat low flash, flammable, o toxic solvents.

Four multiple element transducer constructed from more than thousand separate magnetostrictiv strips operating at 20 kilocycles second operate the tank. The high thermal stability of the nickel ele ments from which the transduce is constructed makes it possible t use solvents at temperatures up t 400° F.

For more information, *write* Blackstone Corp., Jamestown, N. Y

Additive Stops Spotting

SPOTTING and subsequent corro sion of all metals can be prevente with Entek 45.

It is a liquid additive for ho water rinses.

The product causes rinse water t shed rapidly from the metal sur face, resulting in faster drying and spotless surfaces. At the same time, it leaves a strongly adsorbed, in visible film on the metal surface which protects it from tarnishing and corrosion for months.

Entek 45 may be used effective ly after plating, pickling, or chem ical processing of any kind.

For more information, *write* En thone Inc., subsidiary of American Smelting & Refining Co., New Hav en, Conn.

Strapper Feeds from Coil

USING heavy duty steel strapping directly from the coil, the B1R stretcher eliminates waste, has a high speed take-up, and provides high residual tension.

The unit combines air powered tensioning and manual cutting in one tool.

The stretcher is said to be light, easy to thread, and convenient to operate. Predetermined tension is

(*Please turn to Page* 180)

to keep industry growing

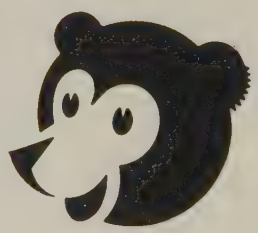
performs in factories

Orbital sanding machines are widely used in furniture factories, by metal fabricators, and in automotive shops — wherever product surfaces are slick finished or polished.

The combination of motion and the cutting action of the coated abrasive produces the satin finish on fine furniture . . the glisten and sparkle on your automobile or toaster. And American ingenuity continues to put the "jitterbug" to work on many odd tasks—from smoothing taped wallboard joints to removing paint.

Product and methods research has brought leadership in coated abrasives to Behr-Manning—and it has brought increased production and lower costs to industry and their customers. That is why Behr-Manning supplies an extraordinary variety of coated abrasives tailored to fit practically every standard machine and need—for industry and the home craftsmen.

In one year, Behr-Manning makes more than 180,000,000 sheets of sandpaper and over 20,000,000 abrasive belts—plus millions of discs, rolls, and other coated abrasive specialties.



The sign of the Bear means a better product . . . and better production

BEHR-MANNING CO.

TROY, NEW YORK—A DIVISION OF NORTON COMPANY

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electrochemicals
In Canada: Behr-Manning (Canada) Ltd., Brantford For Export: Norton Behr-Manning Overseas Inc., Troy, N. Y., U.S.A.

NORTON® ABRASIVES

HARPER®

Pouring silicon bronze at The H. M. Harper Company, Metals Division

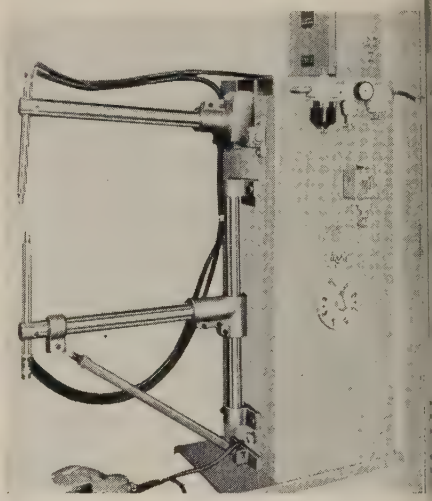
applied by pressing the throttle, reducing operator fatigue. The tools are available for ¾ in. and 1¼ in. steel strapping.

For more information, *write* Acme Steel Co., 135th Street and Perry Avenue, Chicago 27, Ill.

Rocker Arm Type Welder

FEATURES of the Alphil rocker arm welder include a heavy duty heat selector with a full load capacity, an extra heavy rear switch rod, standard electrode holders, and Morse tapers.

Available in capacities from 7½ to 75 kva, the units are completely water cooled. The standard model has a maximum spacing of 12 in. between the arms. Special models



are available for 48 in. throat depth and adjustable lower swivel arm with a maximum spacing of 28 in. between the arms.

Timer and contactor are optional features, and modifications in arm length and swivel drop can be made as required.

For more information, *write* Alphil Spot Welder Mfg. Corp., 1058 Pacific St., Brooklyn 38, N. Y.

Radial Drills Have Wide Range, Capacity

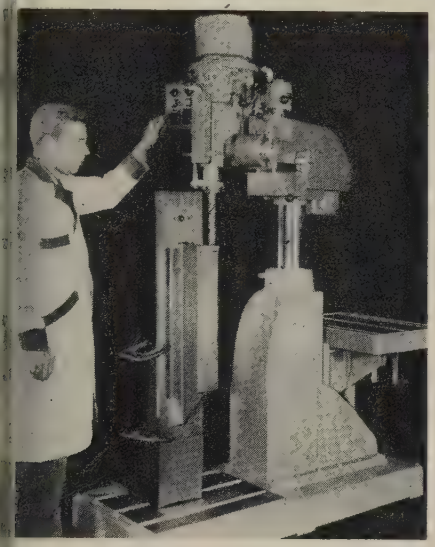
YOU CAN swing a workpiece more than 4 ft high and 5 ft in diameter under the Johansson 1, 2, and 3 hp radial drills.

By rotating the ram, either of

Two work stations can be used. The rear work platform is for handling small pieces.

Shorter parts can be handled on an adjustable table at the front of the machine.

The sliding radial arm can be moved to within 5 in. of the column or out to drill to the center



of a 5 ft circle. Automatic locks and power elevation allow the drill heads to be locked in any position radially and horizontally.

A direct gear drive provides eight spindle speeds, ranging from 60 to 2400 rpm.

For more information, *write* I. O. Johansson Co., Skokie, Ill.

Electric Clutch-Sheave Fits Standard Motors

EQUIPMENT builders and industrial users now can get the advantage of electric no-load starting without the cost usually incurred to adapt standard electric clutches to primary shafts. The Electro-Sheave, a combined electric clutch and sheave assembly, installs directly on all standard NEMA electric motor-shafts.

The units engage or release at any speed.

If inching or jogging is desired, several starts are possible in less than one revolution of the clutch without what is considered normal wear and tear on motors, controls, or machinery.

Release is instantaneous and the load is braked without plugging the motor.

The clutch, ball-bearing sheave,

HARPER®

Corrosion-resistance starts here

ARE YOU FASTENING CORROSION INTO YOUR PRODUCT?

Have you ever stopped to think about the important job your fastenings must do? They must "hold it together"—whether you apply them in production or in maintenance. More than any other component —your fastenings should be corrosion-resistant to resist the extremes in heat, fumes, chemicals, moisture and weathering.

It is here that HARPER'S thirty-five years specialized experience in corrosion-resistant fastenings can serve you. HARPER produces its own metals in its Metals Division. Stainless Steels, Silicon Bronze, Naval Bronze, Brass, Copper, Aluminum and Titanium are cold and hot-headed into standard and non-standard EVERLASTING FASTENINGS in its Bolt Division. For you, HARPER maintains the broadest standard product line in the industry—plus the facilities and "know-how" to produce your custom sizes and shapes.

Corrosion-resistance is our business—it is not a by-product or an after-thought. Be sure— specify HARPER EVERLASTING FASTENINGS in the size, shape and metal you need.

HARPER DISTRIBUTORS everywhere maintain complete stocks for immediate delivery. See your Yellow Pages.

THE H. M. HARPER COMPANY

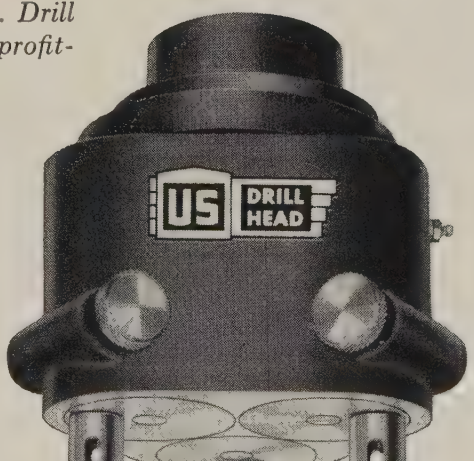
8200 LEHIGH AVENUE • MORTON GROVE, ILLINOIS

Q. Are you drilling holes in your MONEY POCKET?

A. *NOT* when you use *U.S. DRILL HEADS!*

That's because Adjustable U. S. Drill Heads are designed and built for profit-making performance!

Positive all-gear drive . . . Shaved gears for smooth, quiet operation . . . High factor of safety in design for greater reliability . . . Anti-friction bearing mounting of shafts and spindles for permanent alignment . . . Double Duty tools—when your drilling machine has a reversing spindle, you can drill and tap the same hole pattern with one head.



Standard Adjustable style is made in 5 models—58 sizes. A rugged head ideally suited for high production and flexibility.

Write for Catalog AD-57. Or, send specifications of your requirements. No obligation, of course.

US DRILL HEAD

Adjustable and Fixed Center Multiple Drilling Heads.
Individual Lead Screw Multiple Tapping Heads.

UNITED STATES DRILL HEAD CO.

BURNS STREET • CINCINNATI 4, OHIO

and shaft extension sleeve all fit as a single package onto motorshafts. Actuation of the clutch field attracts and locks the armature, which picks up motor rotation and transmits it to the pulley. When the clutch is disengaged, the sheave runs freely on antifriction bearings.

For more information, *write* Warner Electric Brake & Clutch Co., Beloit, Wis.

Low Headroom Hoist

LOW HEADROOM requirements can be met with the Robbins & Myers Type F3 electric hoists, available in capacities from 1½ through 7½ tons. (Example: The 5-ton model requires only 24 in.)

Each hoist is powered by a 7½ hp, 30 minute, 55° C rise, totally enclosed motor with weatherproof brake.

Extra large diameter cable drums permit increased lift and reduce the effect of bending fatigue in the hoisting cable. A four-position, weight operated limit switch protects both the hoist and the operator. When the hook block reaches maximum safe height, the motor is automatically reversed, lowering the lock to a safe position.

For more information, *write* Hoist & Crane Div., Robbins & Myers Inc., Springfield, Ohio.

Rotary Table Provides Precise Angular Spacing

PRECISE angular spacing is assured with an 11-in. rotary table (Model 2) which reads to 1 second and has an over-all performance accuracy of ±2 seconds throughout the entire 360 degrees.

Accuracy is achieved through the

use of a nondisengageable, thread-ground worm in combination with accurately spaced teeth of its mating gear.

Accurate in either horizontal or vertical position, the rotary table is ideal for precision spacing applications on jig borers and jig grinders. An additional vernier permits normal reading even in the vertical position. The table can be used in conjunction with its companion unit, the Model 2 Sine Plate.

For more information, *write* Moore Special Tool Co. Inc., 800 Union Ave., Bridgeport 7, Conn.

Machine Coats Structurals

APPLYING mill type protective coatings (pigmented and unpigmented) on pipes, tubes, bars, angles, and other structural shapes is simplified with the cone spray coater.

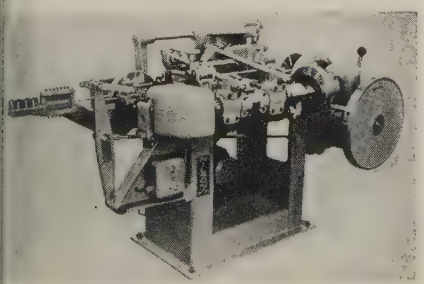
Heat and pressure, not air, atomize the coating. A timed spray cycle and synchronously adjustable spray heads reduce overspray to the point where direct recirculation to the feed system is not required.

No circulation means no loss of solvent, no premature oxidation of coating material, and no contamination of feed system by mill scale and dirt. Solvent is never added to adjust viscosity and the machine doesn't have to be flushed out after using.

For more information, *write* the Cleanola Co., 1116 William Flinn Highway, Glenshaw, Pa.

4-Slide Machine Has Space Saving Design

FLOOR SPACE requirement for the No. S-1-F combination press and 4-slide forming machine is only 53 by 57 in., a reduction of more



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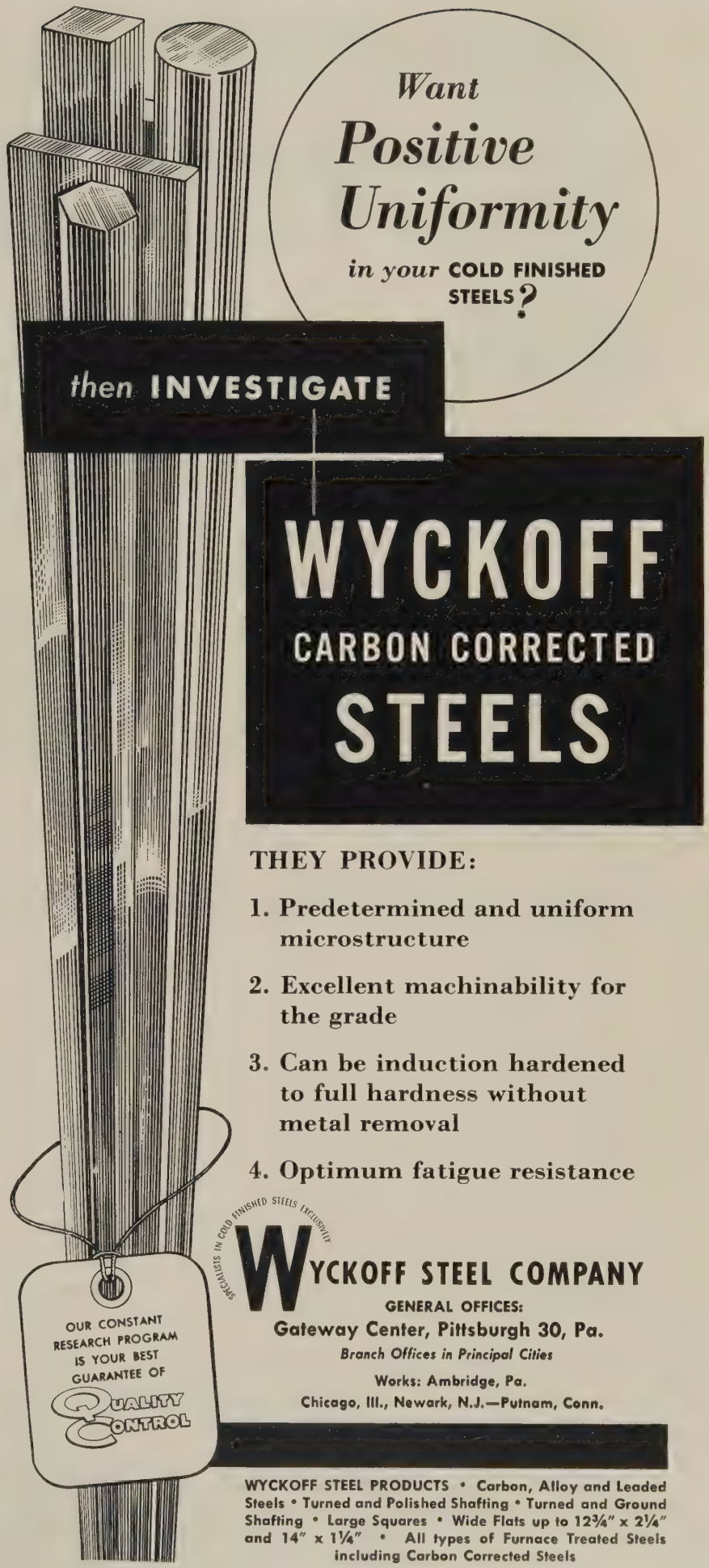
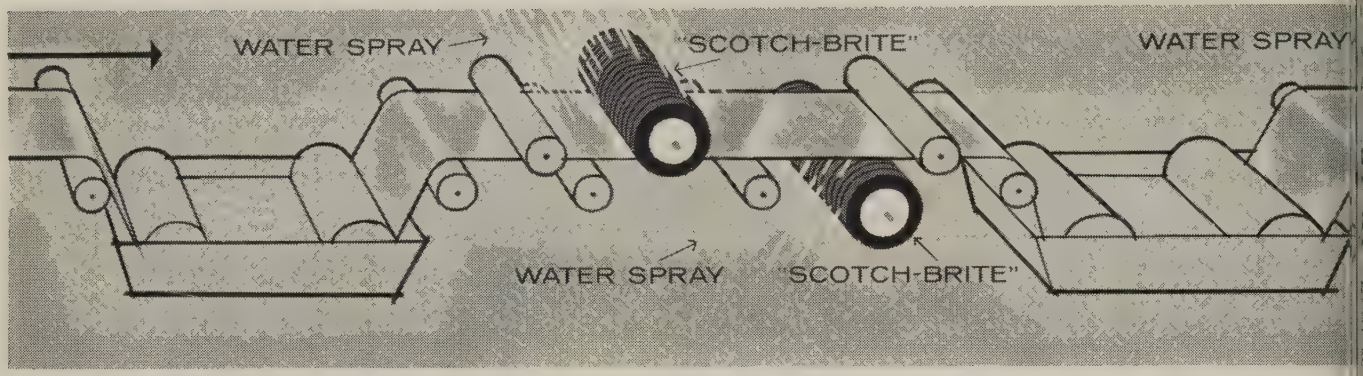


NEW from 3M...

REG. U.S. PAT. OFF.

"SCOTCH-BRITE" BRAND Finishing Material



Upgrades finishes at low cost—

"SCOTCH-BRITE" Brand Finishing Material is a newly developed Nylon web, impregnated with microscopic working materials—*completely unlike any other finishing material you have ever seen.* It is lightweight, flexible, and available in a range of sizes in sheet, roll and section forms. It can be used in any metal cleaning or finishing operation to obtain finer end finishes with greater surface uniformity. (Another similar product in the "SCOTCH-BRITE" family, introduced in February 1958, has already revolutionized floor maintenance through its ability to *slash costs.*)

STEEL PICKLING: Diagram shows how a wide loading of "SCOTCH-BRITE" replaces ordinary scrubbing brushes. Its superior action cleans more effectively and breaks up scale to speed the pickling process; makes possible a *far better* finish with a shorter time cycle or less acid.

FINISHING LINES: Used in production operations for final finishing on any metal, "SCOTCH-BRITE" can upgrade final product quality and appearance by providing a perfectly uniform satin-type finish—at *very low cost.* It enables fabricators to match perfectly a mill finish applied with "SCOTCH-BRITE", or to apply their own satin finish over any mill-supplied finish. And "SCOTCH-BRITE" finishes cool, never discolors, *never distorts.*

You are equipped to use "SCOTCH-BRITE" now. Material is approximately ¼" thick, may be purchased ready-cut or in sheet form for wide-shaft and other existing equipment applications. Five to eight sections

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

han 1000 sq in., compared with the revious model.

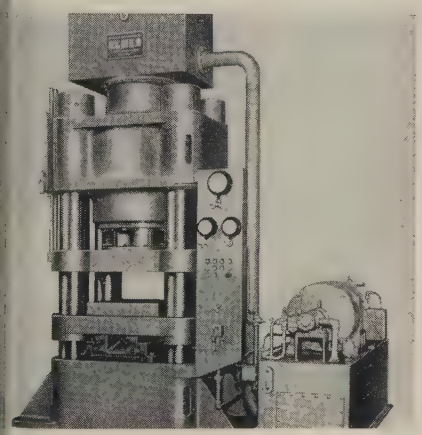
Designed primarily to stamp and orm ribbon metal in one operation, he machine will also form wire ith a maximum feed length of 8 in. can handle wire up to 3/32 in. in iameter and ribbon metal up to 1/4 in. wide. The machine is ounted on a welded steel pedestal ase for maximum strength and gidity. To achieve minimum oor space, the variable speed motor rive is positioned directly in back f the machine, instead of on the id.

For more information, *write* A. H. ilson Machine Co., 600 Bridgeport ve., Shelton, Conn.

pecial Press Coins intered Metal Contacts

HE PRIMARY purpose of the lmes 1000-ton hydraulic coining ress is single-action coining of sin- ered metallic compounds which re- uire extremely high unit pressures.

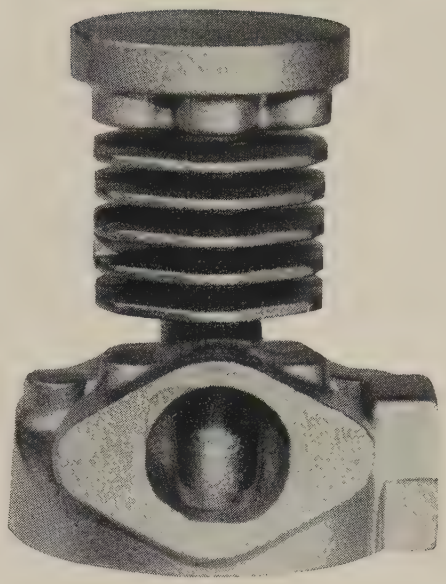
An intermediate moving platen die holder) is used to provide raight-through ejection of the oined contact. The intermediate

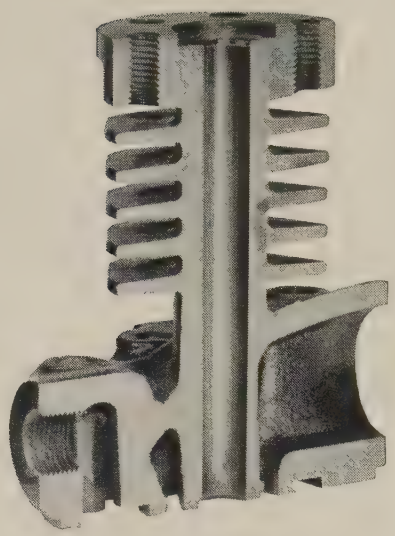


laten can be adapted to serve as second or floating platen as is ormally required for double-action ressing of powdered metals.

All main press components are f steel construction. Heavy tierods ssure over-all rigidity with a mini- um of deflection. Ease of opera- ion, as well as maintenance sim- licity, is engineered into the design.

For more information, *write*





HIGH PRESSURE LOW COST

This 8 pound Meehanite Metal casting made for the Joy Manufacturing Co. by Hamilton Foundry is a fourth stage air compressor cylinder. Pressures build up to 6,000 p.s.i. and require a high strength, pressure tight and wear resisting casting. Alloyed Meehanite®, oil quenched and tempered, raised Brinell hardness of the cylinder wall to 275-300, and increased tensile strength to 60,000 p.s.i. Meehanite was chosen for this casting because controlled structure and small uniform flake graphite produce pressure tight castings of uniform density and strength.

Manufacturing costs drop when uniform, high quality castings go through production. In this case, Meehanite castings from Hamilton Foundry give Joy tight control on finished parts costs by combining dimensional accuracy, uniform machinability, a low rejection rate, and delivery on schedule. Pressure tightness, long service life and fine surface finish insure Joy's reputation for product quality.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

GRAY IRON • ALLOYED IRON • MEEHANITE® • DUCTILE (NODULAR) IRON • NI-RESIST • DUCTILE NI-RESIST • NI-HARD

H®

HAMILTON FOUNDRY

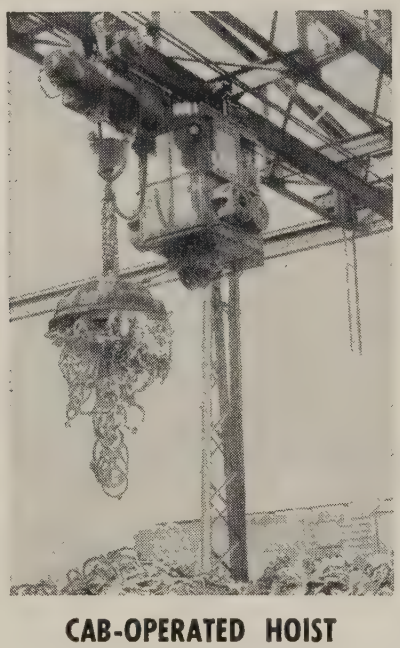
The Hamilton Foundry & Machine Co., 1551 Lincoln Ave., Hamilton, Ohio • TW 5-7491

SHEPARD NILES
HOISTS

CUT HANDLING COSTS

in YOUR plant with the right hoist

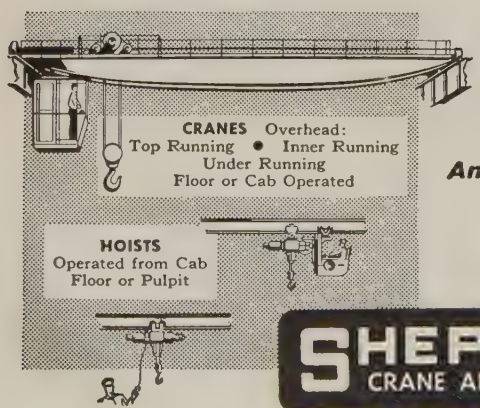
FLOOR-OPERATED HOIST
Operator primarily occupied with other duties, uses hoist for fast, efficient short hauls.



CAB-OPERATED HOIST
Cab operator moves loads at high speeds, can quickly spot material for handling.

WHICH Shepard Niles hoist fits your plant's needs . . . a floor-operated hoist where the operator is freed for other duties or a cab-operated hoist where the operator is engaged full time moving loads through the air? Shepard Niles manufactures both types in capacities from 1 to 20 tons.

Send for the descriptive bulletins on both Cab and Floor Operated Hoists . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



Building
America's Most Complete Line of Cranes and Hoists Since 1903

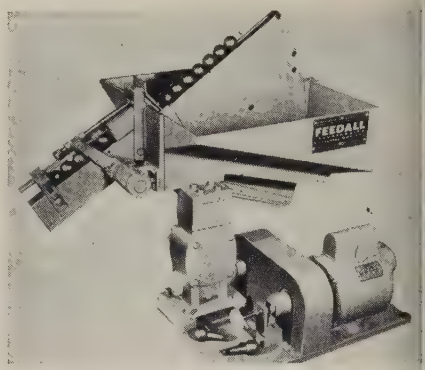
SHEPARD NILES
CRANE AND HOIST CORPORATION
2395 Schuyler Ave., Montour Falls, N. Y.

Elmes Engineering Div., American Steel Foundries, 1150-U Tennessee Ave., Cincinnati 29, Ohio.

Headed-Parts Feeder Has Variable Speed

AUTOMATIC and continuous feed, transfer, or assembly of headed parts is provided by the Model 700 Feedall.

It has an electric control with variable speed from 10 to 20 strokes a minute.



The machine feeds sliding parts $\frac{1}{8}$ to 1 in. in diameter from 1 to 4 in. long; headed work of the same diameter, $\frac{1}{2}$ to 3 in. long. Hopper capacity is $1\frac{1}{2}$ cu ft.

Many flexible features, including automatic bank control devices, are available without special design.

An overload safety system is built in to protect moving parts from damage.

For more information, *write* Feedall Inc., 38399 Pelton Rd., Willoughby, Ohio.

Plastic Protects Metal

SMOOTH and wrinkled metal finishes, stainless steel, polished aluminum, nameplates, glass and plastic surfaces can be protected during manufacture, storage, and transit with Strip-Kote. It's a milky colored, concentrated plastic emulsion (applied by brush or spray) which dries to a transparent, tough film. It contains no inflammable solvents.

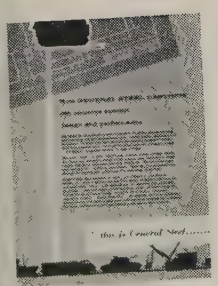
Coverage is 500 sq ft per gallon for a 0.04 in. dried film.

For more information, *write* Chemical Consulting Service, 3711 S. Clement Ave., Milwaukee 7, Wis.

...where industrial progress is cast in steel

urate measurement of ingredients and periodic analysis insure the correct chemistry for the many different alloys produced at General Steel.

METALLURGICAL SERVICE... EXPERT ANALYSIS AND COUNSEL



for folder: **How General Steel gs Can Improve Product Design erformance.** General Steel Cast- tation 230 Granite City, Illinois.

Optimum design in cast steel structures for your products can be gained only through application of a *complete* range of services. One of these is our metallurgical service consisting of expert counsel and accurate control of steel analysis . . . another area in which General Steel is well equipped and staffed.

This expert metallurgical counsel and the facilities of each of our laboratories are available for solving metallurgical problems for customers.

A vast backlog of knowledge and experience is available to you. Let us work with you from the "raw-idea" stage . . . in this way you benefit from our complete services from creative analysis and engineering to follow-through of performance in the field.

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. • EDDYSTONE, PA. • AVONMORE, PA.

WORLDS
LARGEST
STOCK
52100
STEEL
Peterson
STEELS, INC.
Union, New Jersey • Detroit, Michigan • Melrose Park, Illinois

NEW literature

Write directly to the company for a copy

Fire Extinguishers Compared

A folder, "A Guide to Fire Extinguishers," contains a table which compares various types of extinguishers and the comparative effectiveness of extinguishing agents according to Underwriters' Laboratory ratings. Fire Equipment Div., Ansul Chemical Co., Marinette, Wis.

Machine Tool Replacement

"Avoidable Costs" outlines a formula for machine tool and capital equipment replacement. Jones & Lamson Machine Co., Springfield, Vt.

Aluminum Finishing Manual

A booklet discusses different problems concerning the finishing of aluminum as well as methods and materials for taking care of these problems. Frederick Gumm Chemical Co. Inc., 538 Forest St., Kearny, N. J.

New Concepts in Recording

A 16-page booklet describes various methods of recording and identifies and defines those circumstances under which direct writing recording systems provide maximum benefit to industrial users. Brush Instruments Div., Clevite Corp., E. 37th Street & Perkins Avenue, Cleveland 14, Ohio.

Luminous Wall Heating

"Instantaneous Heat," 48 pages, describes a new combustion system for gas-fired, infrared heat treating furnaces. A. F. Holden Co., Detroit, Mich.

Packaging Guide

"How To Pack It," a 32-page booklet, gives information on selection of corrugated packaging. Both standard and special designs are described. Hinde & Dauch Div., West Virginia Pulp & Paper Co., Sandusky, Ohio.

Galvanized Steel Buyers' Guide

"Industrial Procurement — Galvanized Steel Sheets," 16 pages, describes the significant factors governing selection, purchase, and maintenance of galvanized steel sheets for industrial use. Principal producers are listed. American Zinc Institute Inc., 60 E. 42nd St., New York 17, N. Y.

Diesel Engines

Bulletins BU-540 and MS-1328 show design, construction, and mechanical advantages of two new powerplants, the 21000 and the 16000 diesel engines. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Investment Casting Data

A design guide has been compiled by the Investment Casters Society to provide pertinent information to designers and potential users of investment castings. Picco Industries, 1729 N. Chico Ave., El Monte, Calif.

May 11, 1959

Inventory Buildup Is Slower than Expected

STEEL SHIPMENTS will exceed consumption by more than a million tons this month, but the inventory buildup isn't progressing as rapidly as expected. If the United Steelworkers hit the bricks on July 1, more than a few consumers will be seriously threatened. If the walkout lasts more than three or four weeks, some may have to close their doors.

UPTURN BOOSTS CONSUMPTION—Main reason for inventory deficiencies is the suddenness of the recovery. Metalworking executives had no idea that their sales would improve so rapidly. Each time they've stepped up production, they've had to raise their inventory objectives. But since they underestimated second quarter requirements, they've had to divert steel purchased for stock to immediate use.

AUTOMAKERS ON SPOT— Although they can normally get what they want from the steel companies, automakers seem apprehensive about their inventories. Ford Motor Co. and American Motors Corp., after repeatedly boosting production schedules, are in the market for extra tonnage. Chrysler Corp. wants its inventory at 45 days by the end of May and 90 days on July 1. Ford, currently at 30 days, has similar objectives. One of the smaller companies has a 40 day supply and thinks it will be lucky if it can push its stocks up to 70 days by the end of June.

SHIPMENTS LAG— To compound the inventory crisis, steelmakers are behind schedule on shipments of flat-rolled products and heavy plates. Consumers face delays of three or four weeks on cold-rolled, hot-rolled, and galvanized sheets. A Chicago mill is telling customers that it's a month behind on plates and can't possibly keep all its second quarter commitments.

MORE TROUBLE AHEAD?— In the next four weeks, when pressure for deliveries is greatest, shipments may be hindered by a shortage of trucks and freight cars, plus labor unrest and wildcat strikes if contract negotiations appear deadlocked.

RUSH TO SERVICE CENTERS—Refusal by steel producers to accept any more orders for June delivery has triggered a run on service center stocks. An eastern warehouse recently shipped 60,000 lb of bars to a firm that normally buys from mills. First quarter sales of distributors were 25 per cent ahead of 1958 figures, and additional gains of 10 to 15 per cent are expected in the second quarter. For the most part, service centers will supply their regular customers when steel gets tight. They're in no position to backstop the mills.

THIRD QUARTER BRIGHTENS— It's increasingly apparent that there's more to the steel industry's revival than the artificial stimulus that strike hedging provides. Plates, galvanized sheets, and tin mill products will be in strong demand even if a strike is averted.

INGOT RATE HOLDS— Last week, steelmakers operated their furnaces at 94.5 per cent of capacity (unchanged from the previous week's rate) and produced 2,676,000 net tons of steel for ingots and castings.

WHERE TO FIND MARKETS & PRICES

*Current prices were published in the May 4 issue and will appear in subsequent issues.

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Distributors Back Steelmen

The American Steel Warehouse Association agrees that productivity or prices must go up if labor is granted a wage boost. Inflation condemned at Chicago meeting

STRONG support for the steel industry in its fight to hold the line on prices and wages was voted at the 50th annual meeting of the American Steel Warehouse Association at Chicago last week.

A resolution declaring inflation as one of the gravest dangers facing the nation was adopted by the association's board. It was held that steelmakers cannot absorb increased labor costs without productivity advances or price increases. Similarly, the steel service centers can't absorb higher material costs. They'll have to raise prices or their bill from the mill goes up. The effects would immediately be felt by the distributors' 500,000 customers, it was said.

The incoming president of the association, George L. Stewart, vice president, Warehouse Div., Jones & Laughlin Steel Corp., believes the steel industry will fight a wage boost at this time. Other prominent members of the association think in a like vein, indicating they anticipate a strike this summer. Most warehouses are reported adequately stocked to care for regular customers' needs through the summer (see STEEL, May 4, p. 39).

Emphasis at the business sessions of the four day meeting was on management problems steel distributors will face in the next 50 years. Featured speakers included: Dr. Charles H. Malik, president, 13th General Assembly, United Nations; Dr. John Van De Water, University of California; Desmond Barry, Galveston Truck Line, Galveston, Tex.; Edward L. Ryerson, retired chairman, Inland Steel Co.; Clayton P. Fisher Jr., General Electric Co.

Distributors . . .

Prices, Page 212

Distributors report a substantial influx of orders for a wide range of products. This is due to the inability of mills to accept any additional business in most products for second quarter delivery. Some purchases are being made to fill gaps made by delayed mill shipments.

Steel service centers have substantial inventories of all products with the exception of sheets which are tight. Second quarter shipments are expected to range from 15 to 20 per cent higher than in the first quarter.

Imports are not affecting the Seattle market but are a serious problem in the Portland, Oreg., area. Reinforcing bars lead the imports in volume at that point. Some Japanese plates and sheets also have been landed on the West Coast. The established domestic firms are holding the price line, but some price cutting is attributed to fly-by-night concerns.

Baker Steel & Tube Co., a subsidiary of Earle M. Jorgensen Co., Los Angeles, has opened a service center at 1255 22nd St., San Francisco, Calif., stocking steel and aluminum tubular products.

NEWLY ELECTED officers of the American Steel Warehouse Association: (left to right) C. L. Hardy, president of Joseph T. Ryerson & Son Inc., Chicago, chairman of the executive committee; Ralph W. Shaw Jr., president of A. R. Purdy Co., Hindhurst, N. J., vice president; William F. Colclough, president of Cincinnati Steel Products Co., Cincinnati, vice president; George L. Stewart, vice president of Jones & Laughlin Steel Corp.'s Warehouse Div., Indianapolis, president; W. R. Winter, president of Williams Hardware Co., Minneapolis, vice president; and Robert G. Welch, Cleveland, executive vice president

Sheets, Strip . . .

Sheet & Strip Prices, Pages 208 & 209

Sheets and strip are tight. Practically all mills are booked well into the third quarter, and many are losing ground in making deliveries. Automakers are seeking additional tonnages for May and June delivery, but their prospects of getting them are dim. Carryover into next quarter will average at least one month.

Consumption is running ahead of expectations. As a result some consumers are straining every effort to build up stocks, even though deliveries run into the third quarter, and there is a possibility of higher prices on such shipments. A portion of forward buying is being done to get a priority on rolling schedules in case of a summer shutdown. July-August will bring some easing in consumption as usual, but in case of a strike, July orders would move back to September. Most third quarter orders are arranged for shipment that month.

Bethlehem Pacific Coast Steel Corp. reports flat-rolled galvanized products solidly booked to September. Fabricators on the West Coast are scrambling for supplies as distributors report shortages. Japanese galvanized material, avail-

able in good quantity, is priced above domestic.

"Almost everyone wants galvanized sheets now," says a spokesman for Granite City Steel Co., Granite City, Ill. The mills of this firm, as well as many others, continue to operate at capacity, but are unable to meet demands fully. Leadtime on sheets is 45 days before the first of the month scheduled for delivery. Granite City is making only corrugated galvanized but is preparing to mill flat.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 208

Demand for reinforcing bars is heavier.

Although still under pressure, prices for fabricated bars in New England are somewhat steadier except for bridge tonnage. Competition for highway structures is intense. Suppliers are generally meeting delivery promises but are finding this more difficult.

Effort is being made in the Pacific Northwest to expedite current commitments in view of the stri threat. Backlogs are fairly co fortable in that area. Several ma reinforcing bar projects are sche uled for placement before July 1.

Steel Bars . . .

Bar Prices, Page 207

A few mills producing hot-roll bars can still enter tonnage second quarter delivery but o on certain sizes and in relative small amounts. The tight situati has stimulated buying for Ju Producers anticipate good operatio for that month if there isn't a st strike.

Fastener manufacturers and c drawers are especially interested future positions, as compared w most other consuming lines. C drawn steel can be had for t quarter where converters can dr on hot stock inventories. In ma instances, this limits greatly t range of tonnage that can be ha dled in this quarter.

Bar producers in the Los Ange district are booked solidly throu May and are accepting orders delivery through the third qu ter.

Plates . . .

Plate Prices, Page 207

Plate demand is strong with su plies limited. Mills are virtua booked solidly for the second qu ter and are cautious in maki third quarter promises. One m western mill, for instance, has one month carryover on plates a says prospects are dim for an i provement by midyear.

Another mill has notified its pl customers that it is one month arrears in making deliveries. problem, however, is the result o construction program which int feres with obtaining maximum p duction on its plate mill.

Structural fabricators, tank sho and pipe lines are consuming la tonnages. Freight car builders c tinue to step up their needs, though a leveling off is expec soon as equipment orders app to have passed their peak, at le for the time being. Ship requi ments are tapering, although s involving a heavy tonnage.

Clad and head order backl are light. Orders for clad pla have not kept pace with carb

in furnace lining . . .

Plicast Monolithic Castables

better 4 ways

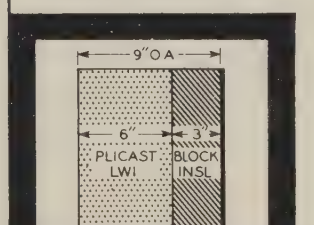
Study was made using special and ordinary linings in a car type annealing furnace operating at an inside temperature of 1800° F. Plicast LWI Insulating Castable and fire brick were compared to determine the hourly heat loss and heat storage capacity for each square foot of furnace wall.

1 **Heat loss 33% less . . . heat storage capacity 91% less with Plicast.** Outcome of the test illustrated to the right shows savings gained using lighter two-component wall poured with Plicast LWI Castable backed with block insulation.

2 **Cost of operating furnace much less with Plicast.** In this test $1,380 (14%) was saved in fifty weeks operating a car type furnace with a wall area of 300 square feet 8 hours daily, 5 days a week.

3 **Less material and maintenance needed with Plicast.** These results were obtained with one-third less refractory material in the walls and arch.

4 **Larger furnace capacity with Plicast.** The thinner walls added 6 inches in width, 3 inches in depth and height to the inside dimensions.



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or: .29 gal. oil

Heat loss: 270 btu/sq. ft.
(still air at 70° F.)
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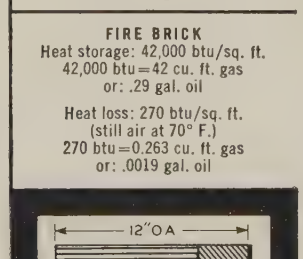
or: .0019 gal. oil



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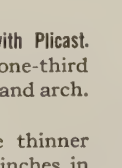

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nd alloy grades in forward cover-ng. Despite longer processing, lad material can be shipped in six o eight weeks; pressed and spun eads, in four to six weeks.

The general contract has been laced for a ballistic missile instal-ation near Spokane, Wash., in-olving large storage vessels (500 ons or more of plates).

Stainless Steel . . .

Stainless Steel Prices, Page 211

Production of stainless and heat esisting steel ingots in the first uarter, 1959, totaled 346,167 net ons, reports the American Iron & teel Institute. In the preceding uarter 300,522 tons were pro-uced, and in the first quarter, 958, output was only 167,821 net ons.

The total in the first three months this year was the largest or any quarter since the closing hree month period in 1956 when 60,823 tons were produced.

In all of 1958 production was 92,984 tons vs. 1,000,357 in 1957 nd 1,200,569 in 1956.

Calstrip Steel Corp., Los Angeles, as started production of stainless teel strip. It will be rolled on a endzimir mill in widths up to 13 n. in a thickness range of 0.008 o 0.075 in. The company also olls strip in low carbon and pring steels.

Tubular Goods . . .

Tubular Goods Prices, Page 211

Most users of seamless pipe, in-luding utilities, are covered through une, and some letdown in third uarter bookings is expected. Dis-ributors are not placing forward rders for buttweld pipe in heavy olume because availability of ton-ages for shipment within ten days etards the building of inventory. onsumption and spot ordering are eavier for construction.

Bethlehem Steel Co., Bethlehem, a., will fabricate 21,000 linear ft f 30 in. caisson pipe for the founda-ions of the Prudential Tower, oston.

Demand for oil country goods emains strong. For the fourth onsecutive week, rotary drilling op-erations in the U. S. set a 1959 igh, according to a weekly survey by the Hughes Tool Co., Houston. The firm counted 2108 rigs in op-eration, an increase of 27 over the previous week. Texas drilling also continues upward, with 770 rigs running vs. 760 the previous week. The national figure represents a gain of 317 rigs over the last week in April a year ago.

Wire . . .

Wire Prices, Pages 209 & 210

Wire products generally are closed out for the second quarter. Some third quarter business is being accepted. Mills in New England will ship most second quarter tonnage without carryovers, and in most instances users of industrial grades will have accumulated close to a 60 day inventory.

Producers are meeting this moderately heavier demand without extension in deliveries beyond the usual leadtime in most instances. Wire mills are operating 10 to 15 points under the steel industry average.

Demand for stainless steel wire is described as booming. Manufacturers wire is holding up well, primarily because auto production is strong.

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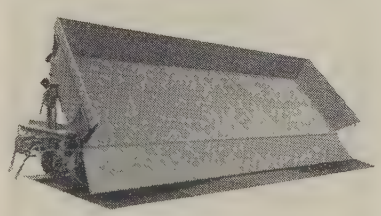

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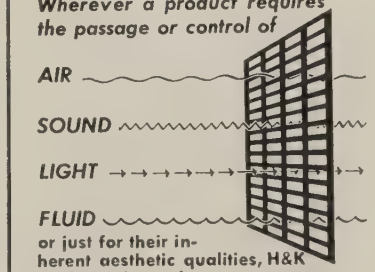

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Container Shipments Ris

Shipments of steel pails totale 5,448,946 units in February, an i crease of 9 per cent above Janua shipments and 19 per cent abo the February, 1958, total, repo the Bureau of the Census. Shi ments during the first two mont of the year totaled 10,457,214 un against 9,993,095 units in the san period last year.

Movement of steel shipping ba rels and drums in February co prised 2,561,711 units, a drop of per cent from the preceding mont but an increase of 11 per cent ov the February, 1958, total. Cum lative total for the first two mont of 5,166,306 units compared wi 4,894,099 units in the correspon ing period of 1958.

Tool Steel . . .

Tool Steel Prices, Page 211

Shipments of high speed an tool steel (excluding hollow dri steel) increased to 9584 tons i March from 7646 tons in Februar reports the American Iron & Ste Institute, New York. That com pares with 5773 tons in Marc 1958.

The March, 1959, total was th highest for any month since th 10,132 tons in the same month tw years ago.

Cumulative shipments in the fir quarter were 24,778 tons compare with 17,951 tons in the like perio a year ago and 28,771 tons tw years ago.

Ferroalloys . . .

Ferroalloy Prices, Page 214

Union Carbide Metals Co., a d vision of Union Carbide Corp., Ne York, has made a revision in charg chrome grades and prices. Price are per pound of contained chro mium for carload lots of lump ma terial in bulk: Charge chrome (maximum 63 per cent Cr, 6 pe cent C, and 7 per cent Si), 22.0 charge chrome 2 (50-59 per cen Cr, maximum 8 per cent C, and per cent Si), 23.0c; refined chrom 1 (30-59 per cent Cr, maximum per cent C, and 2 per cent Si 25.0c; and refined chrome 2 (50-5 per cent Cr, maximum 5 per cen C, and 12 per cent Si), 24.0c.

Opens Merchant Bar Mill

Alaska Steel Mills Inc., Fairbanks, Alaska, will place its merchant bar mill at Seattle in production May 15. Output of the mill will include reinforcing steel and merchant carbon bars.

Rails, Cars . . .

Track Material Prices, Page 210

Railroads are buying new equipment at a pretty fair clip now that an increasing volume of freight traffic is in sight. The buying, superimposed on an already tight market, is affecting light plates and light structurals for freight cars. Rails and track accessories are also being purchased more freely.

Canada . . .

Consolidated Mining & Smelting Co. of Canada Ltd. is completing arrangements for construction of a steel plant at Kimberly, B. C., to cost $20 million. Plans call for production of pig iron to start early in 1961 with initial annual capacity of 36,500 tons. When completed, production will include steel ingots, billets, and rolled steel products with output of 100,000 tons yearly.

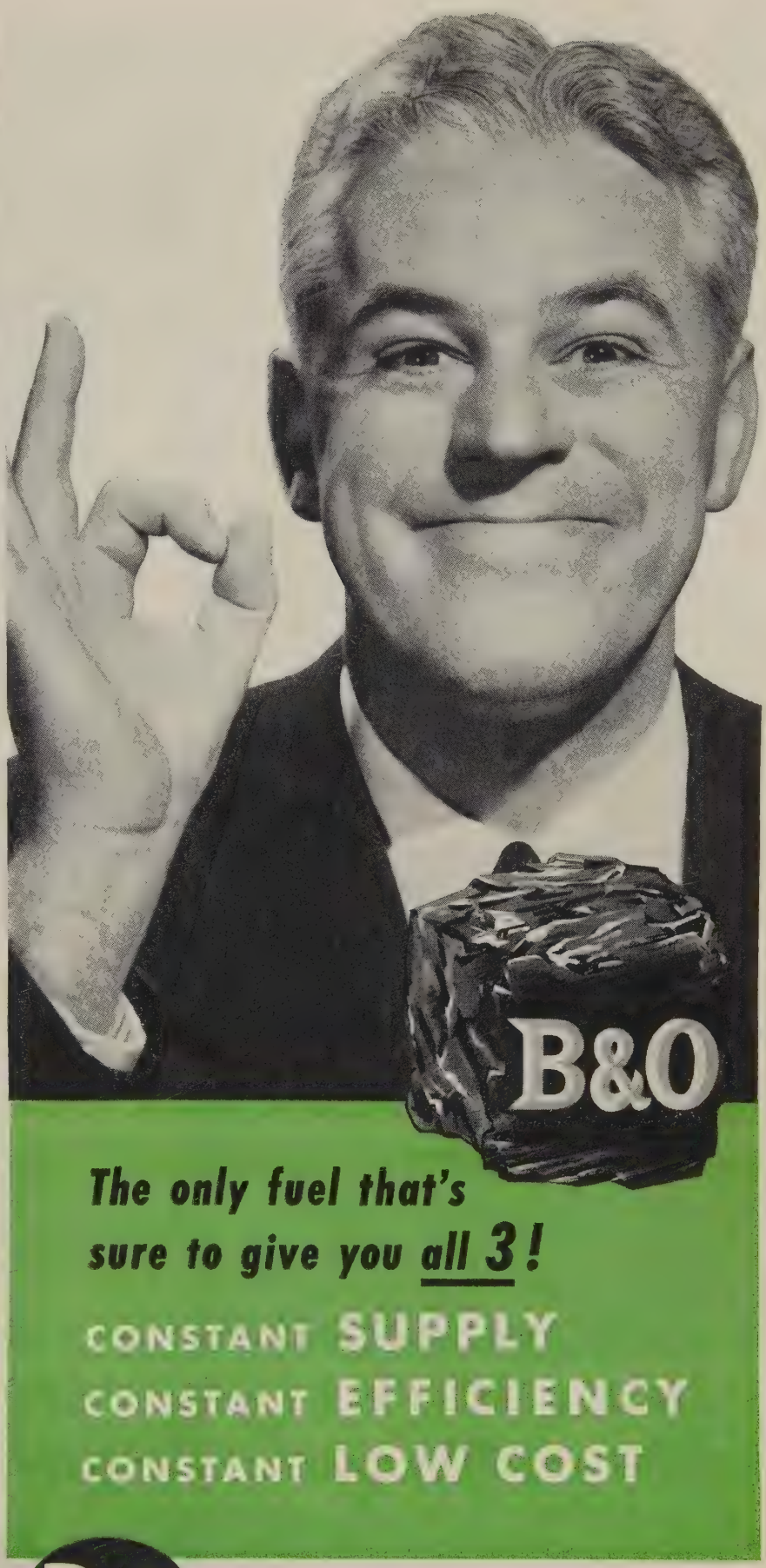
For the week ended Apr. 25, production of steel ingots in Canada amounted to 114,826 tons (94.6 per cent of capacity) against 112,822 tons (92.9 per cent) in the preceding week.

Ryerson Tries a New Warehouse Price Plan

A new system of warehouse steel pricing is being tried by Joseph T. Ryerson & Son Inc.'s Pittsburgh facility. It involves a new method of figuring the schedule of quality extras and discounts based on actual item costs.

In some cases, prices are advanced; in others, they're reduced. The net effect: A pricing structure that more accurately reflects costs on each item and size.

The new plan, described at the American Steel Warehouse Association's annual meeting last week (Page 197), grew out of an extensive cost study based on distribution cost analysis. It became effective May 1—but only at the firm's Pitts-



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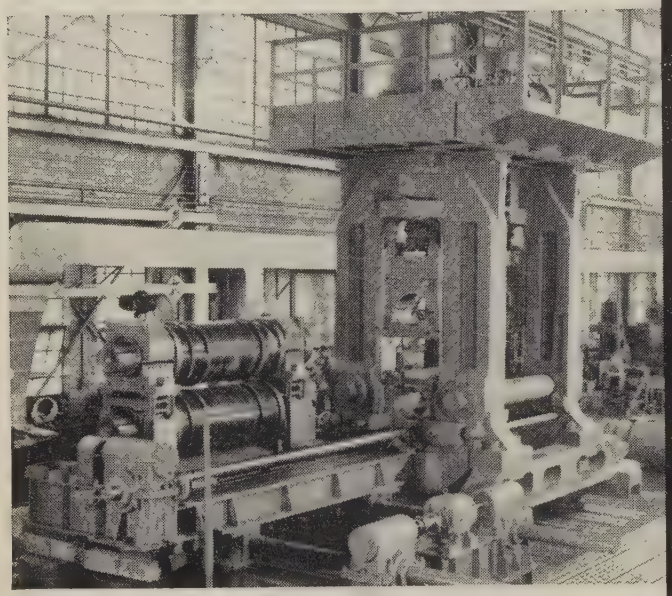
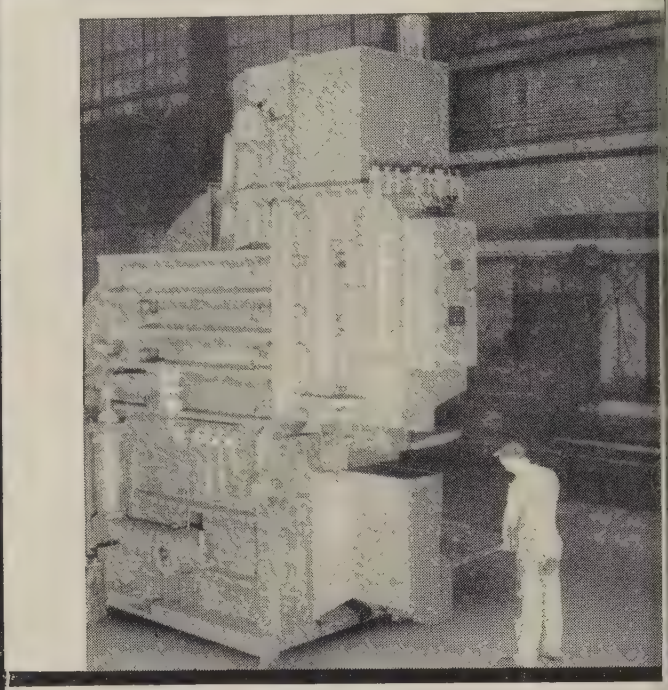


Blooming Mills by BIRDSBORO



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burgh warehouse. Its extension to other districts will probably depend on how it works out there.

Quantity extras and discounts are not new in the warehouse industry; they've been in vogue since the early 1920s.

Structural Shapes . . .

Structural Shape Prices, Page 207

Leading structural shape mills are booked up completely for the quarter on wide flange beams and have little left in the standard sections. So buying for third quarter delivery is being accelerated.

Fabricators are slow to order beyond jobs in hand. Requirements of jobs vary, and it is difficult to buy accurately for inventory. Structural awards are not quite as numerous as they were a month ago but continue to account for substantial tonnage. Competition among fabricators has whittled quotations down to uncomfortably low levels—another reason advance buying is at a minimum.

There is a considerable tonnage, notably bridges, on which New England shops are not covered. They are entering plain material orders for third quarter delivery for specified work. A shutdown of structural mills for an extended period would result in a shortage of some sizes and shapes within a few weeks.

Fabricators on the West Coast take a gloomy view of the second half. Threat of a midsummer shutdown has prompted advancement of several major projects, resulting in a number of rush jobs on which contractors desire delivery by July 1. So some see little new work in the last two quarters.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

725 tons, Clear, Alaska, Air Force project, reported to Gate City Steel Inc., Boise, Idaho; Baker & Ford, Bellingham, Wash., general contractors.

240 tons, substation projects, various sites, to Bethlehem Pacific Coast Steel Corp., Seattle, by Bonneville Power Administration, Portland, Oreg.

150 tons, wide flange, General Supply Office, Navy, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

STRUCTURAL STEEL PENDING

14,000 tons, transmission tower; bids to Bonneville Power Administration, Portland, Oreg.

2218 tons, transmission line projects, King, Kittitas, Chelan, and Douglas counties, Washington; bids to Bonneville Power Administration, Portland, Oreg., May 11 and 26, and June 9 and 23, respectively.

1245 tons, intake gates and stoplogs, Tuscarora powerplant; bids May 21, f.o.b. Niagara Falls, N. Y., to Power Authority, State of New York, N. Y.

1120 tons, three radar towers; bids to U. S. Engineer, Seattle, advanced to May 12 from May 5.

1000 tons, gates and structures, dam, Snake River; bids in to U. S. Engineer, Walla Walla, Wash., May 6.

700 tons, Atlas ballistic missile project, near Spokane, Wash.; general contract to S. Patti Construction Co., MacDonald Construction Co., C. H. Leavell & Co., St. Louis, joint second low bid $6,859,000, to U. S. Engineer, Seattle.

680 tons (also 150 tons of reinforcing), Washington state, two span Yakima County; John E. Alexander, Seattle, general contractor.

600 tons, Idaho state law enforcement building, Boise, Idaho; R. E. Rice Construction Co., Boise, low base, $1,859,417.

125 tons, warehouse and cold storage building, Wenatchee, Wash.; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

470 tons, First Hill apartment, Seattle, to Mercer Steel Co., Seattle; Teufel Construction Co., Seattle, general contractor.

190 tons, Washington state King County span, to Northwest Steel Rolling Mills Inc., Seattle; Northwest Construction Co., Seattle, general contractor.

120 tons, Westward Hotel, Anchorage, Alaska, and high school, Granger, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

1350 tons, ballistic missile project near Spokane, Wash.; general contract to S. Patti Construction Co. and associates, St. Louis.

300 tons, Washington state, two spans, King County; general contract to Ostruske-Murphy Inc., Tacoma, Wash.

260 tons, Idaho state highway projects; bids to Boise, May 19.

250 tons, Washington state, two girder spans, King County; bids to Olympia, May 19.

PLATES . . .

PLATES PLACED

425 tons, carbon hull, General Supply Office, Navy, Philadelphia, to Phoenix Steel Corp., Harrisburg, Pa.

PLATES PENDING

500 tons or more, fuel storage facilities, ballistic missile project near Spokane, Wash.; general contract awarded.

200 tons, 500,000-gal elevated tank, AFB, Minot, N. Dak.; bids May 20, U. S. Engineer, Omaha, Nebr.

200 tons or more, two steel water tanks, 1.3 million gal capacity; bids to Kent, Wash., May 14.

100 tons, grade Hy-80; bids May 11, Navy Purchasing Office, Washington.

100 tons, 200,000-gal elevated tank, NAS, Whidbey Island, Wash.; bids May 20, public works officer, Navy, Seattle.

PIPE . . .

CAST IRON PIPE PENDING

1400 tons, Kent County, District No. 93, Mercer Island, Wash.; bids in.

396 tons, King County, District No. 49, Washington; bids in.

172 tons, King County, District No. 68, Washington; bids in.

85 tons; bids in to Omak, Wash., May 1.

RAILS, CARS . . .

RAILROAD CARS PLACED

Seaboard Air Line, 1000 box cars, costing about $11.3 million, with 700 going to the Pullman-Standard Car Mfg. Co.'s plant at Bessemer, Ala., and 300 to the Magor Car Corp., New York.

Northern Pacific Railway, fifty, 50 ton refrigerator cars, to Pacific Car & Foundry Co., Renton, Wash.

Northern Pacific, 599 freight cars, including 99 seventy-ton covered hopper cars (74 have been placed with Pullman-Standard Car

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Phone: COlony 9-7771
TWX Wallingford, Conn. 277

Mfg. Co., Chicago, 25 with the Greenville Steel Car Co., Greenville, Pa.) and 500 boxcars with the railroad's own shops at Brainerd, Minn.

Atchison, Topeka & Santa Fe, 25 seventy-ton mechanical refrigerator cars, to own shops.

Pig Iron . . .

Pig Iron Prices, Page 212

Shipments of foundry iron this month are the heaviest reported this year. Most gray iron and malleable foundries are melting on a five-day week schedule. They generally do not have substantial stocks and are taking shipments in line with operations. Foundries turning out railroad and automotive castings are especially active.

The movement of pig iron west on the Great Lakes from Buffalo is picking up steadily with numerous sailings booked for May and June. The movement is considerably heavier than at this time a year ago. Present prospects are for a big season.

Iron Ore . . .

Iron Ore Prices, Page 213

Stocks of iron ore in the U. S. and Canada at the end of March totaled 44,940,239 tons, reports the American Iron Ore Association, Cleveland. At the end of March a year ago, the total was 53,051,633 tons.

Consumption of iron during the month totaled 12,071,858 tons vs. 7,361,414 in the like month of 1958. The cumulative total to the end of March was reported at 32,575,501 tons against 22,253,550 tons in the first quarter of last year.

At the end of March, 236 of 276 blast furnaces were in operation (224 in the U. S. and 12 in Canada). At the same time a year ago, active stacks numbered 169 (158 in the U. S. and 11 in Canada).

Receipts of iron ore and ore agglomerates totaled 10,047,216 gross tons in the first quarter of this year, compared with 8,363,924 tons in the like period a year ago. Receipts this year have included 4,759,903 tons of U. S. ores (326,762 Lake Superior and 4,433,141 other); 404,885 tons of Canadian (193,716 Lake Superior and 211,169 other); and 4,882,428 tons of foreign ores.

Shipments of Lake Superior iron ore totaled 2,978,023 tons in April, compared with only 62,560 tons in April a year ago. Of this year's shipments, 2,910,070 tons were from U. S. ports and 67,953 tons from Canadian ports.

Iron Ore Statistics—March, 1959

Stocks on hand at furnace yards and docks at end of month
(Gross tons)

	—U. S. Ores—		—Canadian Ores—		Foreign	
At U. S. Furnace Yards:	L. Superior	Other	L. Superior	Other	Ores	Total
Eastern	3,221,262	199,064	100,182	1,027,025	4,281,696	8,829,229
Pitts.-Youngstown	5,874,402	43,870	392,666	1,479,294	3,398,391	11,188,623
Cleveland-Detroit	5,949,406	114,509	139,226	261,652	365,592	6,830,385
Chicago	6,656,993	(a)	(a)	.....	(a)	6,656,993
Southern	(a)	1,952,969	.....	(a)	2,178,853	4,131,822
Western	.....	964,606	.....	.....	.....	964,606
Total	21,702,063	3,275,018	632,074	2,767,971	10,224,532	38,601,658
At U. S. Docks:						
Lake Erie	3,007,515	.....	91,193	1,470,695	.....	4,569,403
Other	.....	.....	.....	(a)	(a)	(a)
Total U. S. Stocks	24,709,578	3,275,018	723,267	4,238,666	10,224,532	43,171,061
Canadian Stocks	1,302,794	.....	71,792	324,263	70,329	1,769,178
Total U. S.-Canada	26,012,372	3,275,018	795,059	4,562,929	10,294,861	44,940,239

Consumption in U. S. and Canada During March, 1959
(Gross tons)

	—U. S. Ores—		—Canadian Ores—		Foreign	
In U. S. Districts:	L. Superior	Other	L. Superior	Other	Ores	Total
Eastern	859,833	235,256	23,738	262,490	1,058,467	2,439,784
Pitts.-Youngstown	2,229,405	138,782	128,913	409,263	606,240	3,512,603
Cleveland-Detroit	1,342,753	31,075	85,093	56,533	156,591	1,672,045
Chicago	2,361,099	(a)	(a)	.....	(a)	2,361,099
Southern	(a)	571,697	.....	(a)	281,533	853,230
Western	.....	673,480	.....	.....	.....	673,480
In U. S.:						
Blast furnaces	5,057,445	1,010,610	198,148	447,713	659,051	7,372,967
Steel furnaces	197,268	89,228	560	8,856	594,124	890,036
Sintering (1)	1,538,377	545,831	39,036	271,717	849,656	3,244,617
Miscellaneous (2)	.....	4,621	.....	.....	.....	4,621
Total U. S.	6,793,090	1,650,290	237,744	728,286	2,102,831	11,512,241
In Canada:						
Blast furnaces	254,036	.....	91,038	81,390	.....	426,464
Steel furnaces	6,104	.....	.....	17,430	6,896	30,430
Sintering (1)	63,386	.....	18,799	20,538	.....	102,723
Miscellaneous	.....	.....	.....	.....	.....	.....
Total Canada	323,526	.....	109,837	119,358	6,896	559,617
Total U. S.-Canada	7,116,616	1,650,290	347,581	847,644	2,109,727	12,071,858

1. Iron ore consumed in sintering plants not at mine site. 2. Sold to nonreporting companies or used for purposes not listed. (a) Data included in other districts.
Data from American Iron Ore Association.

DISTRICT INGOT RATES
(Percentage of Capacity Engaged)

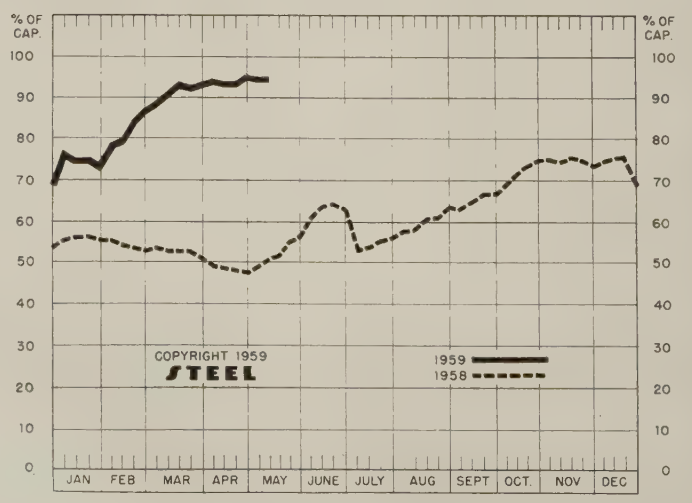
	Week Ended May 10	Change	Same Week 1958	Same Week 1957
Pittsburgh	97.5	+ 4*	51	92.5
Chicago	95.5	+ 1*	54.5	88
Eastern	97	+ 1	48	95.5
Youngstown	94	+ 2	45	84
Wheeling	92	+ 1	68	81.5
Cleveland	99	+ 3.5*	27.5	86.5
Buffalo	105	+ 2.5	34.5	92.5
Birmingham	90.5	— 2.5	65	95.5
Cincinnati	96	— 6.5*	28.5	69
St. Louis	105.5	0*	75.5	84
Detroit	98	— 1	33.5	82.5
Western	94.5	— 0.5	67	99
National Rate	94.5	0	50	87

INGOT PRODUCTION‡

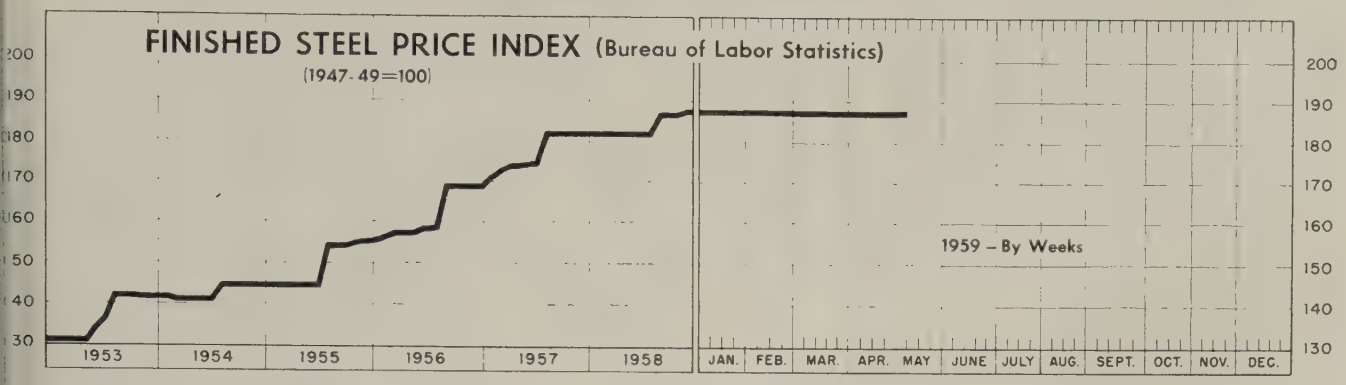
	Week Ended May 10	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	166.1†	163.5	164.4	83.0
NET TONS (In thousands)	2,668†	2,627	2,641	1,334

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



May 5, 1959	Week Ago	Month Ago	April Avg.	Year Ago
186.7	186.7	186.7	186.7	181.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended May 5

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.615
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.658
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R. Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.480
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.905
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.253
		Pipe, Line (100 ft)	199.530
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.900
Tubing, Mechanical, Carbon (100 ft)	27.005	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.665
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800	Nails, Wire, 8d Common	9.825
		Wire, Barbed (80-rod spool)	8.722
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	May 6 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$113.70
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	33.67	34.33	36.17	32.00	27.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	May 6 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.405
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.65
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate(1.50 lb)box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods ⅜-⅝" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	May 6 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry(Birm.)deld., Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$34.50	$36.50	$36.50	$31.50	$28.50
No. 1 Heavy Melt, E. Pa.	33.50	33.50	34.50	34.50	23.00
No. 1 Heavy Melt, Chicago	33.00	33.00	37.50	30.00	30.50
No. 1 Heavy Melt, Valley	35.50	35.50	40.50	33.50	29.50
No. 1 Heavy Melt, Cleve.	33.50	33.50	36.50	30.50	26.50
No. 1 Heavy Melt, Buffalo	32.50	32.50	34.50	26.50	25.50
Rails, Rerolling, Chicago	56.50	57.50	59.50	49.00	41.00
No. 1 Cast, Chicago	46.50	45.50	46.50	38.50	38.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

Nameless terrors lurk in the shadows...
doubly terrifying because they are unknown...

Even adults are sometimes afraid of the dark

It's only human to avoid hidden truths that could disturb us. So we worry about cancer, instead of doing something about it.

Wouldn't a checkup be more constructive? Most likely it will prove there's nothing to worry about. But please remember: Cancer can now be cured, in many cases, when detected early enough.

And one more thing...

While you think about it, make out a check to the American Cancer Society. Your contribution is desperately needed for research that can bring this killer under complete control. For cancer *will* be conquered—never fear.

Guard your family... fight cancer with a checkup and a check

Send your gift to "Cancer" in care of your local post office.

American Cancer Society

Steel Prices

Mill prices as reported to STEEL, May 6, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 208; footnotes, page 210.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)
Detroit S41 ..... $82.00
Economy,Pa. B14 ..... 82.00
Farrell,Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B2 ..... 80.00
Lackawanna,N.Y. B2 .. 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 80.00
S.Chicago,Ill. R2, U5 .. 80.00
S.Duquesne,Pa. U5 ..... 80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ..... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3 .. 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 .. 99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. G8 ..... 99.50
Seattle B3 ..... 109.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14 .. 99.50
S.Duquesne,Pa. U5 ..... 99.50
S.SanFrancisco B3 ..... 109.00
Warren,O. C17 ..... **99.50**

Alloy, Forging (NT)
Bethlehem,Pa. B2 .. $119.00
Bridgeport,Conn. C32 .. 119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 ..... 119.00
Conshohocken,Pa. A3 .. 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 ..... 119.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 .. 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 .. 119.00
Johnstown,Pa. B2 .... 119.00
Lackawanna,N.Y. B2 .. 119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 ..... 119.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 .. 119.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14 .. 119.00
S.Duquesne,Pa. U5 .. 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 .. 122.50
Warren,O. C17 ..... 122.50

SKELP
Aliquippa,Pa. J5 ..... 5.05
Munhall,Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O. R2 ..... 5.05
Youngstown R2, U5 .... 5.05

WIRE RODS
AlabamaCity,Ala. R2 .. 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 .... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1 .. 6.40
Johnstown,Pa. B2 .... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 .... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 .... 6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 .. 6.40
Pittsburg,Calif. C11 .... 7.20
Portsmouth,O. P12 .... 6.40
Roebling,N.J. R5 .... 6.50
S.Chicago,Ill. R2, W14 .. 6.40
SparrowsPoint,Md. B2 .. 6.50
Sterling,Ill.(1) N15 .... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 .... 6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 .. 5.50
Aliquippa,Pa. J5 ..... 5.50
Atlanta A11 ..... 5.70
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 .... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 .... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1 .. 5.50
Johnstown,Pa. B2 .... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 .... 5.60
Lackawanna,N.Y. B2 .. 5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 .... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 .... 5.55
Portland,Oreg. O4 ..... 6.25
Seattle B3 ..... 6.25
S.Chicago,Ill. U5, W14 .. 5.50
S.SanFrancisco B3 .... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 .... 6.20
Weirton,W.Va. W6 .... 5.50

Wide Flange
Bethlehem,Pa. B2 .... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 .... 6.45
IndianaHarbor,Ind. I-2 .. 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 .... 5.55
S.Chicago,Ill. U5 ..... 5.50
Sterling,Ill. N15 ..... 5.50
Weirton,W.Va. W6 .... 5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5, W14 .. 6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 .... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif K1 .... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1 .. 8.05
Johnstown,Pa. B2 ..... 8.10
KansasCity,Mo. S5 .... 8.15
Lackawanna,N.Y. B2 .. 8.10
LosAngeles B3 ..... 8.75
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago,Ill. U5, W14 .. 8.05
S.SanFrancisco B3 .... 8.70
Sterling,Ill. N15 ..... 7.75
Struthers,O. Y1 ..... 8.05

H.S., L.A., Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 .... 8.05
Lackawanna,N.Y. B2 .. 8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05
Sterling,Ill. N15 ..... 7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 .... 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 .. 5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 .... 6.50
Lackawanna,N.Y. B2 .. 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 .. 6.50
Weirton,W.Va. W6 .... 6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 ... 5.30
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 .. 5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 .. 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity,Ill. G4 .... 5.40
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 .. 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 .. 5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 .... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14 .. 5.30
SparrowsPoint,Md. B2 .. 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 .... 5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 .... 5.30
Youngstown (27) R2 .. 5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .... 7.05
Fontana,Calif. K1 ..... 7.85
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 .. 7.05

PLATES, Wrought Iron
Economy,Pa. B14 .... 13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ..... 7.95
Ashland,Ky. A10 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 .... 7.95
Conshohocken,Pa. A3 .. 7.95
Economy,Pa. B14 ..... 7.95
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif(30) K1 .. 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 .. 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14 .. 7.95
SparrowsPoint,Md. B2 .. 7.95
Warren,O. R2 ..... 7.95
Youngstown U5, Y1 .... 7.95

PLATES, Alloy
Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 .... 7.50
Coatesville,Pa. L7 ..... 7.50
Economy,Pa. B14 ..... 7.50
Farrell,Pa. S3 ..... 7.50
Fontana, Calif. K1 .... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 .... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B3 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5 W14 .. 7.50
SparrowsPoint,Md. B2 .. 7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES
Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 .. 6.375
IndHarbor,Ind. I-2 .. 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
S.Chicago,Ill. U5 .... 6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 .. 5.55
Ashland l.c.l.(15) A10 .. 6.05
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 ..... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 .. 5.675
Aliquippa,Pa. (9) J5 .. 5.675
Alton,Ill. L1 ..... 5.875
Atlanta(9) A11 ..... 5.875
Bessemer,Ala.(9) T2 .. 5.675
Birmingham(9) C15 .. 5.675
Buffalo(9) R2 ..... 5.675
Canton,O. (23) R2 .... 6.15
Clairton,Pa.(9) U5 .. 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 .... 5.675
Emeryville,Calif. J7 ... 6.425
Fairfield,Ala.(9) T2 .. 5.675
Fairless,Pa.(9) U5 .... 5.825
Fontana,Calif.(9) K1 .. 6.375
Gary,Ind.(9) U5 .... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1. 5.675
Johnstown,Pa.(9) B2 .. 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 ... 5.675
LosAngeles(9) B3 .... 6.375
Massillon,O. (23) R2 .. 6.15
Midland,Pa.(23) C18 .. 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 .. 6.125
Niles,Calif. P1 ..... 6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 .. 6.025
Pittsburg,Calif.(9) C11 .. 6.375
Pittsburgh(9) J5 .... 5.675
Portland,Oreg. O4 .... 6.425
Riverdale,Ill.(9) A1 .. 5.675
Seattle A24, B3, N14 .. 6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 .. 5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15 .. 5.675
Sterling Ill (9) N15 .... 5.775
Struthers,O.(9) Y1 .... 5.675
Tonawanda,N.Y. B12 .. 5.675
Torrance,Calif.(9) C11 .. 6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5 .. 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 .. 6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 .... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 .... 6.725
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 .... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1. 6.725
Johnstown,Pa B2 .... 6.725
KansasCity,Mo. S5 .... 6.975
Lackawanna,N.Y. B2 .. 6.725
LosAngeles B3 ..... 7.775
Lowellville,O. S3 ..... 6.725
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 .... 6.725
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 .. 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 ..... 8.30
Clairton Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 .... 9.00
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 .... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 .... 8.55
Lackawanna,N.Y. B2 .. 8.30
LosAngeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. R2, W14 .. 8.30
S.Duquesne,Pa. U5 .... 8.30
S.SanFrancisco B3 ..... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 .. 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 ... 5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 .. 5.675
Tonawanda,N.Y. B12 .. 5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 .. 6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 .... 6.425
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 .... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 .. 11.75*
Alloy
Ambridge,Pa. W18 .. 10.175
BeaverFalls,Pa. M12 .. 10.175
Camden,N.J. P13 .... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 .... 10.35
SpringCity,Pa. K3 .... 10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ..... 7.65
BeaverFalls,Pa. M12,R2 .. 7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 .... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 .. 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 .... 7.65
Hammond,Ind. J5, L2 .. 7.65
Hartford,Conn. R2 ..... 8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 .... 9.10
LosAngeles(49) P2, R2 .. 9.10
Mansfield,Mass. B2 .... 8.20
Massillon,O. R2, R8 .... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 .. 7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 .... 7.90
Putnam,Conn. W18 .... 8.20
Readville,Mass. C14 .... 8.20
S.Chicago,Ill. W14 .... 7.65
SpringCity,Pa. K3 .... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Waukegan,Ill. A7 ..... 7.65
Willmantic,Conn. J5 .. 8.15
Youngstown F3, Y1 .... 7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 .. 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .... 9.025
BeaverFalls,Pa. M12,R2 .. 9.025
Bethlehem,Pa. B2 .... 9.025
Bridgeport,Conn. C32 .. 9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 9.025
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 .... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa.. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 .. 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 .... 9.025
Hammond,Ind. J5, L2 .. 9.025
Hartford,Conn. R2 .... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 .. 9.025
LosAngeles P2, S30 .... 11.00
Mansfield,Mass. B5 .. 9.325
Massillon,O. R2, R8 .. 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 .... 9.225
S.Chicago,Ill. W14 .... 9.025
SpringCity,Pa. K3 .... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 .... 9.025
Willmantic,Conn. J5 .. 9.325
Worcester,Mass. A7 .. 9.325
Youngstown F3, Y1 .. 9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 ....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ...5.925
Kokomo,Ind. C16 ....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle A24, B3, N14 ..6.425
S.Chicago,Ill. R2, W14.5.675
S.Duquesne,Pa. U5 ...5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated; To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 ....7.35
SandSprings,Okla. S5 ..7.60
Seattle A24, B3, N14 ...7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt) B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt)L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa. (3) F5 ...5.575
Franklin,Pa. (4)F5 ...5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ...5.575
Tonawanda(4) B12 ...6.10

SHEETS

SHEETS, Hot-rolled Steel (18 Gage and Heavier)

Lackawanna,N.Y. B2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 ....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 ....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R.(14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 ....7.525
Cleveland J5, R2 ....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 ....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 ....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ...7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 .6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 .6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 ....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2..6.275
Mansfield,O. E6 ....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ...6.275
SparrowsPoint,Md. B2.6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 ....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 ....9.275
Cleveland J5, R2 ....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ...9.275
Youngstown Y1 ..... 9.275

SHEETS, Culvert	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ...6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ...6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.32

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.12
Pittsburgh J5 .....10.12
SparrowsPt.(39) B2 ..10.02

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.27
Irvin,Pa. U5 .....7.27

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ....7.12
Middletown,O. A10 ....7.12

SHEETS, Electrogalvanized

Cleveland(28) B2 .....7.6
Niles,O.(28) R2 .....7.6
Weirton,W.Va. W6 ....7.5
Youngstown J5 .....7.5

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.52
Butler,Pa. A10 (type 2) 9.62

SHEETS, Enameling Iron

Ashland,Ky. A10 ....6.77
Cleveland R2 .....6.77
Fairfield,Ala. T2 ....6.77
Gary,Ind. U5 .....6.77
GraniteCity,Ill. G4 ....6.87
Ind.Harbor,Ind. I-2, Y1 6.77
Irvin,Pa. U5 .....6.77
Middletown,O. A10 ....6.77
Niles,O. M21, S3 .....6.77
Youngstown Y1 .....6.77

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W. Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel Div., U. S. Steel Corp.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.
O4 Oregon Steel Mills

P1 PacificStates Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.,
P5 Pilgrin Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain&Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ...5.10
Allenport,Pa. P7 .....5.10
Alton,Ill. L1 .....5.30
Ashland,Ky.(8) A10 ....5.10
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 ....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2, Y1 .5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2.5.10
LosAngeles(25) B3 .....5.85
LosAngeles C1 .....8.60
Minnequa,Colo. C10 ....6.20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle(25) B3 .....6.10
Seattle N14 .....6.60
Sharon,Pa. S3 .....5.10
S.Chicago W14 .....5.10
S.SanFrancisco(25) B3..5.85
SparrowsPoint,Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.40
Farrell,Pa. S3 .....8.40
Gary,Ind. U5 .....8.40
Houston S5 .....8.65
Ind.Harbor,Ind. Y1 ....8.40
KansasCity,Mo. S5 .....8.65
LosAngeles B3 .....9.60
Lowellville,O. S3 .....8.40
Newport,Ky. A2 .....8.40
Sharon,Pa. A2, S3 .....8.40
S.Chicago,Ill. W14 ....8.40
Youngstown U5, Y1 ....8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10 .....7.575
Bessemer,Ala. T2 .....7.575
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.575
Fairfield,Ala. T2 .....7.575
Farrell,Pa. S3 .....7.575
Gary,Ind. U5 .....7.575
Ind.Harbor,Ind. I-2, Y1.7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ....8.325
Seattle(25) B3 .....8.575
Sharon,Pa. S3 .....7.575
S.Chicago,Ill. W14 ....7.575
S.SanFrancisco(25) B3.8.325
SparrowsPoint,Md. B2 .7.575
Warren,O. R2 .....7.575
Weirton,W.Va. W6 ....7.575
Youngstown U5, Y1 ...7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....5.35
Warren,O. R2 .....5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....7.425
Baltimore T6 .....7.425
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7, J5 .....7.425
Dearborn,Mich. S3 ....7.425
Detroit D2, M1, P20 ..7.425
Dover,O. G6 .....7.425
Evanston,Ill. M22 ....7.525
Farrell,Pa. S3 .....7.425
Follansbee,W.Va. F4 ..7.425
Fontana,Calif. K1 .....9.20
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ...7.425
Indianapolis S41 .....7.575
LosAngeles C1, S41 ....9.30
McKeesport,Pa. E10 ..7.525
NewBedford,Mass. R10.7.875
NewBritain,Conn. S15..7.875
NewCastle,Pa. B4, E5..7.425
NewHaven,Conn. D2 ...7.875
NewKensington,Pa. A6.7.425
Pawtucket,R.I. R3 ....7.975
Pawtucket,R.I. N8 ....7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale,Ill. A1 .....7.525
Rome,N.Y.(32) R6 ....7.425
Sharon,Pa. S3 .....7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford,Conn. W2..7.875
Warren,O. R2, T5 .....7.425
Worcester,Mass. A7 ...7.975
Youngstown S41, Y1 ..7.425

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Carnegie,Pa. S18 .....15.55
Cleveland A7 .....15.55
Dover,O. G6 .....15.55
Farrell,Pa. S3 .....15.55
FranklinPark,Ill. T6 ..15.55
Harrison,N.J. C18 ....15.55
Indianapolis S41 .....15.70
LosAngeles S41 .....17.75
Lowellville,O. S3 .....15.55
Pawtucket,R.I. N8 ....15.90
Riverdale,Ill. A1 .....15.55
Sharon,Pa. S3 .....15.55
Worcester,Mass. A7 ...15.85
Youngstown S41, Y1 ..7.425

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.80
Dearborn,Mich. S3 ....10.80
Dover,O. G6 .....10.80
Farrell,Pa. S3 .....10.80
Ind.Harbor,Ind. Y1 ...10.80
Sharon,Pa. S3 .....10.80
Warren,O. R2 .....10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)			Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	...	...	18.85	22.95	27.80
Buffalo W12	...	...	18.85	....	....
Fostoria,O. S1	...	...	19.05	22.15	....
FranklinPark,Ill. T6	...	...	19.20	23.30	28.15
Harrison,N.J. C18	...	...	18.85	22.95	27.80
NewYork W3	...	...	18.85	22.95	27.80
Palmer,Mass. W12	...	...	18.85	....	....
Trenton,N.J. R5	...	...	18.85	22.95	27.80
Worcester,Mass. A7, T6	...	...	18.85	22.95	27.80
Youngstown S41	...	...	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)			
IndianaHarbor,Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5	10.50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.,Calif. C11.	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$8.20
Fairfield,Ala. T2 .....8.30
Fairless,Pa. U5 .....8.30
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.20
GraniteCity,Ill. G4 .....8.30
Ind.Harbor,Ind. I-2, Y1.8.20
Irvin,Pa. U5 .....8.20
Niles,O. R2 .....8.20
Pittsburg.Calif. C11 ...8.85
SparrowsPoint,Md. B2 ..8.20
Weirton,W.Va. W6 .....8.20
Yorkville,O. W10 .....8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....7.85
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind.Harbor,Ind. Y1 ....7.85
Irvin,Pa. U5 .....7.85
Yorkville,O. W10 .....7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5 .....$10.05
Irvin,Pa. U5 .....10.05
Weirton,W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.425*
Dover,O. G6 .....7.425*
Evanston,Ill. M22 ...7.525*
McKeesport,Pa. E10 ..7.50*
Riverdale,Ill. A1 .....7.525*
Warren,O. B9, S3, T5.7.425*
Worcester,Mass. A7 ...7.975
Youngstown S41 .....7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 .....7.50
Sharon,Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Farrell,Pa. S3 .....5.525
Riverdale,Ill. A1 .....5.675
Sharon,Pa. S3 .....5.525
Youngstown U5 .....5.525

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	18.10	19.70	20.20	20.70	15.70††	
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 .....8.00
Alton,Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville,Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 .....8.00
Crawfordsville,Ind. M8..8.10
Donora,Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield,Ala. T2 .....8.00
Fostoria,O.(24) S1 .....8.10
Houston S5 .....8.25
Jacksonville,Fla. M8 ...8.35
Johnstown,Pa. B2 .....8.00
Joliet,Ill. A7 .....8.00
KansasCity,Mo. S5 .....8.25
Kokomo,Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa,Colo. C10 ....8.25
Monessen,Pa. P7, P16 ..8.00
N.Tonawanda,N.Y. B11 .8.00
Palmer,Mass. W12 ....8.30
Pittsburg.Calif. C11 ...8.95
Portsmouth,O. P12 .....8.00
Rankin,Pa. A7 .....8.00
S.Chicago,Ill. R2 .....8.00
S.SanFrancisco C10 ....8.95
SparrowsPoint,Md. B2 ..8.10
Sterling,Ill.(1) N15 ....8.00
Sterling,Ill. N15 .....8.10
Struthers,O. Y1 .....8.00
Waukegan,Ill. A7 .....8.00
Worcester,Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 .....8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....13.40
KansasCity,Mo. U3 ...12.90
Minnequa,Colo. C10 ...12.775
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....13.60
NewHaven,Conn. A7 ..12.95
Palmer,Mass. W12 ....13.70
Pittsburg.Calif. C11 ..13.45
Portsmouth,O. P12 ....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ..13.50
Struthers,O. Y1 .....13.40
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ...12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5, U3.10.00
LosAngeles B3 .....10.70
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
NewHaven,Conn. A7 ..10.05
Palmer,Mass. W2 .....10.05
Pittsburg.Calif. C11 ...10.70
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 .....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ...10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Worcester,Mass. A7 ..10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Bartonville,Ill. K4 .....9.85
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Fostoria,O. S1 .....9.80
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5, U3.10.00
LosAngeles B3 .....10.70
Milbury,Mass.(12) N6..10.05
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
Muncie,Ind. I-7 .....9.95
Palmer,Mass. W12 ....10.05
Pittsburg.Calif. C11 ..10.70
Portsmouth,O. P12 .....9.75
Roebling,N.J. R5 .....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ...10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Wor'ster,Mass.A7,J4,T6 10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....16.50
Bartonville,Ill. K4 ....16.40
Chicago W13 .....16.30
Cleveland A7 .....16.30
Crawfordsville,Ind. M8.16.40
Fostoria,O. S1 .....16.30
Houston S5 .....16.55
Jacksonville,Fla. M8 ..16.65
Johnstown,Pa. B2 ....16.30
KansasCity,Mo. S5 ....16.55
Kokomo,Ind. C16 .....16.30
Minnequa,Colo. C10 ...16.55
Monessen,Pa. P16 ....16.30
Muncie,Ind. I-7 .....16.50
Palmer,Mass. W12 ....16.60
S.SanFrancisco C10 ...17.15
Waukegan,Ill. A7 .....16.30
Worcester,Mass. A7, J6.16.60

WIRE, Tire Bead

Bartonville,Ill. K4 ....17.15
Monessen,Pa. P16 .....17.15
Roebling,N.J. R5 .....17.65

ROPE WIRE (A)

Bartonville,Ill. K4 ....13.45
Buffalo W12 .....13.45
Fostoria,O. S1 .....13.45
KansasCity,Mo. U3 ....13.70
Johnstown,Pa. B2 ....13.45
Monessen,Pa. P7 .....13.45
Muncie,Ind. I-7 .....13.65
Palmer,Mass. W12 ....13.75
Portsmouth,O. P12 ....13.45
Roebling,N.J. R5 .....13.75
St.Louis L8 .....13.45
SparrowsPt.,Md. B2 ...13.55
Struthers,O. Y1 .....13.45
Worcester,Mass. J4 ...13.75
(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock — **Col.**

AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill A7	173
KansasCity, Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt. Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$10.30

NAILS, Cut (100 lb keg) To Distributors (33)

Wheeling,W.Va. W10	$10.10

POLISHED STAPLES — **Col.**

AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
Sparrows Pt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)

Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville,Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago,Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.54
Atlanta A11	10.70
Bartonville,Ill. K4	9.64
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.26
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill. (37) N15	9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill. K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9 59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
PittsburgCalif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt. Md. B2	10.75
Sterling,Ill.(37) N15	9.59

BALE TIES, Single Loop — **Col.**

AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	21
Crawfordsville,Ind. M8	2.14
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed — **Col.**

AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga. — **Col.**

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	**An'ld Galv. Stone**	**Galv. Stone**
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80†‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80†‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
St'ling(37) N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325§
Atlanta(48)A11	9.10 9.775§
Bartonville(48) K4	9.10 9.80
Buffalo W12	9.00 9.55†
Cleveland A7	9.00 ....
Crawfordsville M8	9.10 9.80†‡
Donora,Pa. A7	9.00 9.55†
Duluth A7	9.00 9.55†
Fairfield T2	9.00 9.55†
Houston(48) S5	9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80†‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	9.00 9.55†
Kans.City(48) S5	9.25 9.80**
Kokomo(48) S16	9.10 9.65†
LosAngeles B3	9.95 10.625§
Monessen(48) P7	8.65 9.35§
Palmer,Mass. W12	9.30 9.85†
Pitts.,Calif. C11	9.95 10.50†
Rankin,Pa. A7	9.00 9.55†
S.Chicago R2	9.00 9.55**
S.SanFran. C10	9.95 10.50**
Spar'wsPt.(48)B2	9.10 9.775§
St'ling(1)(48)N15	9.00 9.70§§
Struthers,O. Y1	9.00 9.65‡
Worcester,Mass.A7	9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. †Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0
Longer than 6 in.	37.0
⅝ in., 3 in. & shorter	47.0
3¼ in. thru 6 in.	40.0
Longer than 6 in.	31.0

¾ in. thru 1 in.:

6 in. and shorter	37.0
Longer than 6 in.	31.0

1⅛ in. and larger:

All lengths	31.0

Undersize Body (rolled thread)
½ in. and smaller:

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)
½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer length	35.0

Lag, Plow, Tap, Blank Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

High Tensile Structural Bolts
(Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated, Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam	50.0
¾ in. diam	47.0
⅞ and 1 in. diam.	43.0
1⅛ and 1¼ in. diam	34.0

NUTS
(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy
Hot Pressed & Cold Punched:

¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	62.0
⅞ in. to 1½ in. incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

⅞ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1⅛ in., incl.	57.0
1⅛ in. and larger	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Cap Screws, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅝ in. and smaller	35.0
¾, ⅞, and 1 in.	16.0
Longer than 6 in.:	
⅝ in. and smaller	3.
¾, ⅞, and 1 in.	+11.

High Carbon, Heat Treated
6 in. and shorter:

⅝ in. and smaller	20.
¾, ⅞, and 1 in.	+ 5.

Longer than 6 in.:

⅝ in. and smaller	+19.
¾, ⅞, and 1 in.	+39.

Flat Head Cap Screws:

¾ in. and smaller, 6 in. and shorter	+85.

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam:

6 in. and shorter	+ 5.
Longer than 6 in.	+29.

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.8%. ⅞ in. and smaller by 6 in. and shorter: 15.0%.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$28.95	$43.40	$55.40	$73.00	$95.10
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	28.95	43.40	55.40	73.00	....
KansasCity,Mo. U3	29.85	43.40	55.40	73.00	95.10
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	28.95	43.40	55.40	73.00	95.10
Pittsburg,Calif. C11	....	43.40	55.40	73.00	....
Pueblo,Colo. W12	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
SparrowsPoint,Md. B2	28.95	43.40	55.40	73.00	95.10
St. Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	28.95	43.40	55.40	73.00	95.10

RAILWAY MATERIALS

	Standard			Tee Rails
Rails	**No. 1**	**No. 2**	**All No. 2**	**60 lb Under**
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

EAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

ize—Inches	2		2½		3		3½		4		5		6	
ist Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
ounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
liquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
mbridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
orain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
oungstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

LECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

oungstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

UTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

ize—Inches	⅛		¼		⅜		½		¾		1		1¼	
ist Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
ounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
liquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
lton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
enwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
utler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
tna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
airless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
ontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
ndiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
orain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
haron, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
naron, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
parrows Pt., Md. B2	2.5	+24	+10.5	+34	+21.5	+43	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
heatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
oungstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

ize—Inches	1½		2		2½		3		3½		4	
ist Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
ounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
liquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
lton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
enwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
tna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
airless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+5.5	1.25	+15.5	1.25	+15.5
ontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
ndiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
orain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+3.5	....	....	....	....
haron, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
parrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
heatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
oungstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis.

tainless Steel

Representative prices, cents per pound; subject to current lists of extras

Sl pe	—Rerolling— Ingot	Slabs	Forg- ing Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Struc- tural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
01	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
02	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
01	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
02	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
02B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
03	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
04	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
04L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
05	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
08	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
09	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
10	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
14	....	....	80.50	....	89.75	94.50	87.75	....	104.25
16	41.25	47.50	64.50	68.50	71.75	75.75	71.75	80.75	80.75
16L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
17	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
21	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.50	65.50
30	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
347-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

roducers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel orp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; abcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip teel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New ngland; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; earborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern tainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel orp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., org-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson teel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainss Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; laryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; acific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh olling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Comany, Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; imonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel iv., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; imken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; ube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; niversal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products o.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; eymour Mfg. Co.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	$36.20	$43.15

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.505	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	...	T-1	1.840
18	4	2	....	...	T-2	2.005
13.5	4	3	....	...	T-3	2.105
18.25	4.25	1	4.75	...	T-4	2.545
18	4	2	9	...	T-5	2.915
20.25	4.25	1.6	12.95	...	T-6	4.330
13.75	3.75	2	5	...	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa. deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24#	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85#	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	10.07	11.12	11.92	53.50	12.17	10.19	13.30#	15.64	10.64	10.27	11.95
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53#	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.00	52.33	8.63	9.10	11.25#	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.20	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25#	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95#	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25#	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.60	16.25	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[3]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill. Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St.. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt.. Matilda, Pa., Portsmouth, Ohio. Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif. $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe:	
Minimum trucklots, freight allowed east of Mississippi River:	
100 mesh, 100 lb bags	11.25
100 mesh, 100 lb pails	9.10§
40 mesh, 100 lb bags	8.10††
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flake (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-98.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	34.50-51.00†
Bronze, 5000-lb lots	52.40-56.40†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	53.00-57.30†
Phosphor-Copper, 5000-lb lots	64.80
Copper (atomized) 5000-lb lots	45.30
Solder	7.00*
Stainless Steel, 304	$0.89
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten: Carbon reduced, 98.8% min, minus 65 mesh	Dollars nom.**
1000 lb	2.80
Less 1000 lb	2.95
Chromium, electroytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scrafing grade. **Depending on price of ore. ††Welding grade.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

—Inches— Diam	Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5⅛	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.40	$5.40	$5.30	$5.75
Bar Size Angles	5.10	5.10	5.00	5.43
Structural Angles	5.10	5.10	4.90	5.43
I-Beams	5.11	5.11	5.01	5.45
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	6.20	6.15	6.05	6.51
Sheets, H.R.	8.30	8.30	8.30	8.60
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.55	6.55	6.55	6.90
Merchant Bars	...	...	5.20	5.65
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5	5.09	6.22	6.04	6.34
Bright Common Wire Nails (§)	7.65	7.65	7.65	7.95

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$10.75-11.00*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian 91.5c-96.5c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00†
48% 2.8:1	38.00-40.00†
48% no ratio	29.00-31.00†

South African Transvaal

44% no ratio	19.75-21.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00†

Domestic

Rail nearest seller

48% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit. ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens: New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearney, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul. ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.

Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies)	.25.00

Cents per lb, f.o.b. tank cars or tank trucks, deld.

Phenol, 90 per cent grade	15.50

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade	$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices. 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max. P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c, less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). 8M x D, carload bulk 20.05c per lb of alloy, carload packed, 21.25c, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices. **65% Ferrosilicon:** Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14 % B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, M 14-18% and Si 53-59%). Carload, lump, bu 23c per lb of alloy, caload packed 24.25c, t lot 26.15c, less ton 27.15c. Delivered. Spo add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, F 1.5-3%). Carload, lump, bulk 24c per lb alloy, carload packed 25.65c, ton lot 27.95 less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3 lb each and containing 2 lb of Cr). Carloa bulk 19.60c per lb of briquet, in bags 20.70 3000 lb to c.l. pallets 20.80c; 2000 lb to c in bags 21.90c; less than 2000 lb in bag 22.80c. Delivered. Add 0.25c for notchin Spot, add 0.25c.

Ferromanganese Briquets: (Weighing appro 3 lb and containing 2 lb of Mn). Carload, bul 14.8c per lb of briquet; c.l., packed, bags 16 3000 lb to c.l., pallets 16c; 2000 lb to c.l bags 17.2c; less ton 18.1c. Delivered. Ad 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing appro 3½ lb and containing 2 lb of Mn and appro ½ lb of Si). C.l. bulk 15.1c per lb of briquet c.l. packed, bags 16.3c, 3000 lb to c.l., pallet 16.3c; 2000 lb to c.l., bags 17.5c; less to 18.4c. Delivered. Add 0.25c for notching. Spot add 0.25c.

Silicon Briquets: (Large size—weighing ap prox 5 lb and containing 2 lb of Si and sma sizes, weighing approx 2½ lb and containin 1 lb of Si). Carload, bulk 8c per lb or briquet packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c 2000 lb to c.l.; bags 10.8c; less ton 11.7c Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ l of Mo each). $1.49 per lb of Mo contained f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb. f.o.b Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or mor $2.15 per lb (nominal) of contained W. De livered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max C 0.1% max). Ton lots 2" x D, $3.45 per lb o contained Cb; less ton lots $3.50 (nominal) Delivered.

Ferrotantalum Columbium: (Cb 40% approx Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7% Fe 20% approx). Carlot bulk 19.25c per lb o alloy, c.l. packed ⅛ in. x 12 M 20.00c, ton lo 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9 11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

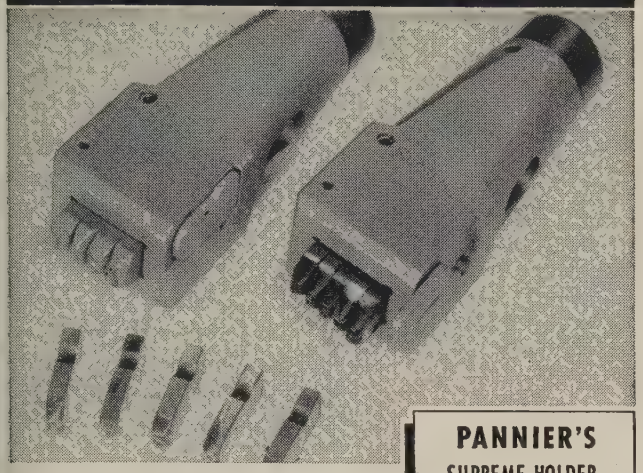
Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosporus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo., in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.

ANOTHER *PANNIER* MASTER MARKER!



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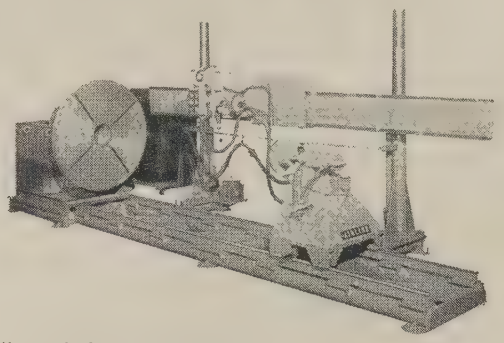

This Airline unit is equipped with a powered tilting 2500 lb. capacity weld positioner. The turntable is driven with an infinitely variable speed drive and provides a speed range of from 0 to 2 rpm.

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Scrap Price Composite Declines

STEEL's composite on No. 1 heavy melting drops 66 cents to $33.67, lowest since May of last year. No improvement is expected until conclusion of labor contract negotiations

Scrap Prices, Page 218

• **Pittsburgh** — Prices on most grades of scrap here have declined in a dull market. Brokers see little chance for improvement until the steel labor situation is clarified. Facing a possible strike on July 1, mills are working off their inventories and trying to conserve cash. A local purchaser is buying small tonnages of No. 1 heavy melting at $35. Brokers for a mill on the fringe of the district are offering dealers only $34, delivered, for that type material.

• **Chicago** — The scrap market is static as far as steelmaking grades are concerned, although local steelmaking operations are at 95.5 per cent of capacity. Buying is negligible. To sustain operations, mills are depending essentially on hot metal from blast furnaces, industrial scrap returned by steel consumers under special arrangement, and revert scrap.

Cast scrap prices are firmer as demand from gray iron foundries improves. Some grades are up $1 a ton.

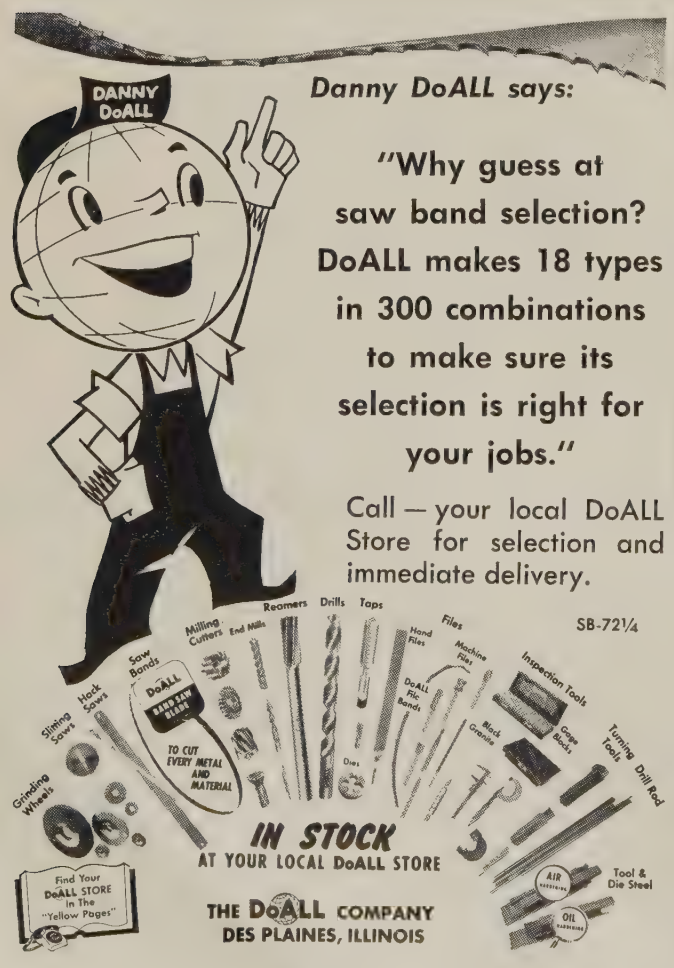
• **New York**—Scrap trading continues quiet. Domestic demand is spotty. A couple of ships are being loaded here for export, but no new business is noted from foreign buyers. Prices are easy with brokers' offerings off $2 a ton on No. 2 bundles at $15-$16. Prices on all other grades are unchanged.

• **Philadelphia** — Scrap prices are relatively steady here, primarily because there is so little business. Exporters are taking a little tonnage, but not enough to offset the lag in domestic demand. Consensus in the trade is that there will be little change in the market into the third quarter.

• **Youngstown**—A sale of No. 2 bundles at $24 a gross ton and No. 1 heavy melting industrial scrap at $39 here indicate the weak demand for scrap. U. S. Steel Corp., which had been charging up to 80 per cent hot metal in its 14 open hearths, with 8 hour heats, had a blast furnace break-out. This knocks out the furnace for a week or ten days and will force more scrap use. Dealers here see little likelihood of any pickup in demand or price until after the new steel pact is made.

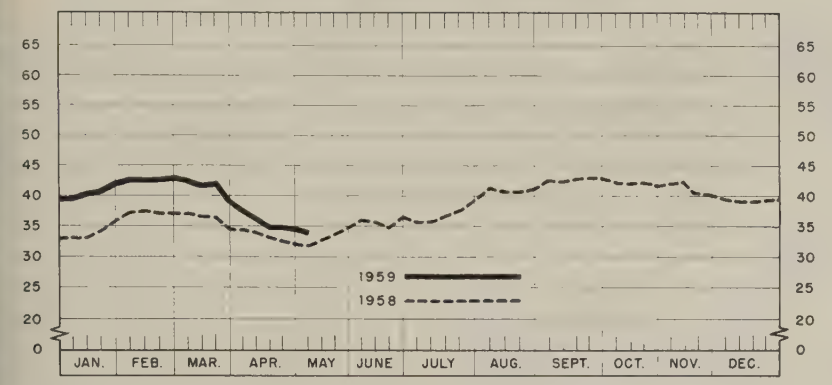
• **Buffalo** — Dealers expect steel mills to place new orders for scrap around prevailing price levels for May delivery. Dealers feel that the market may become slower, but prices aren't expected to go much lower right away.

Dealers are moving as much scrap



STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



May 6 1959	Week Ago	Month Ago	Year Ago	Apr. Avg.
$33.67	$34.33	$36.17	$32.00	$34.96

is possible against current orders. Mills also appear anxious to take in material as fast as it becomes available. When the last steel strike was called here, hundreds of cars of scrap were still en route to mills, presenting a handling problem.

• **Detroit**—The undertone of the local market is soft, but the absence of orders has kept prices from slipping lower for the moment. Dealers think some long term Canadian orders have kept a floor under the market and expect to see this collapse by May 15. Chances are prices will slide off at least $1.

The market for turnings is soft, with dealers refusing to pay more than $8 a gross ton. Cast iron grades have held up reasonably well. One order for cupola cast is reported at $44, delivered.

• **Cincinnati** — Area mills entered the market for May requirements, and prices tumbled another $1 to $2.50 a ton on principal steelmaking grades. A local mill is buying small tonnages as an inventory precaution.

• **St. Louis**—Scrapyard receipts are short. With mill buying limited, the market is quiet. But the price slide has halted, at least temporarily. Machine shop and short shovel turnings are listed at nominal prices.

• **Birmingham** — Brokers continue to have trouble filling orders at present prices. Dealers are accepting orders as long as new scrap lasts, but only trickles are being brought in. They refuse to sell from inventories at present prices.

A railroad list closed last week offered rerolling rails at $56.30 on line, $3.30 more than last quotations. But no takers were found in the district.

(*Please turn to Page* 223)

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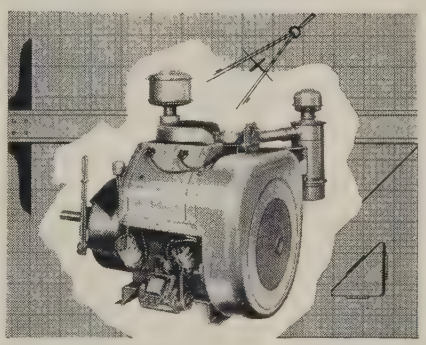

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported STEEL, May 6, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

May 6	$33.67
Apr. 29	34.33
Apr. Avg.	34.96
May 1958	33.21
May 1954	28.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	32.00-33.00
No. 1 dealer bundles	38.00-39.00
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*34.00-35.00*
No. 1 factory bundles	42.00-43.00
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*24.00-25.00*
Cast iron borings	*24.00-25.00*
Cut structurals:	
2 ft and under	*43.00-44.00*
3 ft lengths	*42.00-43.00*
Heavy turnings	*30.00-31.00*
Punchings & plate scrap	*43.00-44.00*
Electric furnace bundles	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	45.00-46.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	46.00-47.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
Rails, 2 ft and under	*54.00-55.00*
Rails, 18 in. and under	*55.00-56.00*
Random rails	*50.00-51.00*
Railroad specialties	*44.00-45.00*
Angles, splice bars	51.00-52.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	120.00-125.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	34.00-35.00
No. 1 hvy melt., dealer	31.00-32.00
No. 2 heavy melting	28.00-29.00
No. 1 factory bundles	37.00-38.00
No. 1 dealer bundles	*32.00-33.00*
No. 2 bundles	22.00-23.00
No. 1 busheling, indus.	34.00-35.00
No. 1 busheling, dealer	31.00-32.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals, 3 ft	40.00-41.00
Punchings & plate scrap	41.00-42.00

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Stove plate	*43.00-44.00*
Unstripped motor blocks	*38.00-39.00*
Clean auto cast	*53.00-54.00*
Drop broken machinery	*53.00-54.00*

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
R.R. malleable	*57.00-58.00*
Rails, 2 ft and under	52.00-53.00
Rails, 18 in. and under	53.00-54.00
Angles, splice bars	*46.00-47.00*
Axles	*61.00-62.00*
Rails, rerolling	*56.00-57.00*

Stainless Steel Scrap

18-8 bundles & solids	215.00-220.00
18-8 turnings	115.00-120.00
430 bundles & solids	120.00-125.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	26.00-27.00
No. 1 busheling	35.00-36.00
No. 1 bundles	35.00-36.00
No. 2 bundles	23.00-24.00
Machine shop turnings	17.00-18.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Low phos	38.00-39.00
Electric furnace bundles	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00

CLEVELAND

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	37.00-38.00
No. 1 bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	33.00-34.00
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	35.00-36.00
Cut structurals, plates 2 ft and under	42.00-43.00
Low phos, punchings & plate	34.50-35.50
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	34.50-35.50

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	38.00-39.00
Heavy breakable cast	38.00-39.00
Stove plate	44.00-45.00
Unstripped motor blocks	33.00-34.00
Brake shoes	36.00-37.00
Clean auto cast	50.00-51.00
Burnt cast	37.00-38.00
Drop broken machinery	50.00-51.00

Railroad Scrap

R.R. malleable	65.00-66.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	46.00-47.00
Railroad specialties	48.00-49.00
Uncut tires	42.00-43.00
Angles, splice bars	51.00-52.00
Rails, rerolling	58.00-59.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	115.00-125.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	23.00
No. 1 busheling	37.00
Machine shop turnings	16.00†
Short shovel turnings	18.00†

Cast Iron Grades

No. 1 cupola	50.00
Charging box cast	42.00
Heavy breakable cast	40.00
Unstripped motor blocks	41.00
Clean auto cast	50.00
Stove plate	45.50

Railroad Scrap

No. 1 R.R. heavy melt.	38.00
Rails, 18 in. and under	49.00
Rails, random lengths	42.50
Rails, rerolling	54.00†
Angles, splice bars	44.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	21.00-22.00
No. 1 busheling	30.00-31.00
Cast iron borings	14.00-15.00
Machine shop turnings	22.00-23.00
Short shovel turnings	23.00-24.00
Bars, crops and plates	40.00-41.00
Structurals & plates	39.00-40.00
Electric furnace bundles	36.00-37.00
Electric furnace:	
2 ft and under	34.00-35.00
3 ft and under	33.00-34.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	52.00-53.00
Rails, random lengths	41.00-42.00
Angles, splice bars	43.00-44.00

PHILADELPHIA

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
No. 1 busheling	35.00-36.00
Electric furnace bundles	38.00-39.00
Mixed borings, turnings	20.00†
Short shovel turnings	23.00-24.00
Machine shop turnings	19.00†
Heavy turnings	32.00-33.00
Structurals & plate	40.00-42.00
Couplers, springs, wheels	42.00-43.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	43.00
Drop broken machinery	49.00-50.00
Malleable	67.00-68.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	26.00-27.00
No. 2 bundles	*15.00-16.00*
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	12.00-13.00
Short shovel turnings	13.00-14.00
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	85.00-90.00

BUFFALO

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	32.00-33.00
No. 2 bundles	22.00-23.00
No. 1 busheling	32.00-33.00
Mixed borings, turnings	19.00-20.00
Machine shop turnings	17.00-18.00
Short shovel turnings	21.00-22.00
Cast iron borings	19.00-20.00
Low phos structurals and plate, 2 ft and under	41.00-42.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	46.00-47.00
No. 1 machinery	50.00-51.00

Railroad Scrap

Rails, random lengths	43.00-44.00
Rails, 3 ft and under	49.00-50.00
Railroad specialties	41.00-42.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*31.50-32.50*
No. 2 heavy melting	*26.50-27.50*
No. 1 bundles	*31.50-32.50*
No. 2 bundles	*20.00-21.00*
No. 1 busheling	*31.50-32.50*
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	17.00-18.00
Cast iron borings	16.50-17.50
Low phos., 18 in.	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	43.00-45.00
Heavy breakable cast	39.00-40.00
Charging box cast	38.00-39.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 18 in. and under	*53.00-54.00*
Rails, random lengths	*46.00-47.00*

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	*20.00*
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	41.00

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks	35.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27
No. 2 heavy melting	22.00-23
No. 1 bundles	26.00-27
No. 1 busheling	26.00-27
Machine shop turnings	8.00-9
Short shovel turnings	*10.00-11*
No. 1 cast	33
Mixed cupola cast	33
No. 1 machinery cast	34

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27
No. 2 heavy melting	17.00-18
No. 1 bundles	28.00-29
No. 2 bundles	16.00-17
No. 1 busheling	26.00-27
Machine shop turnings	*9.00-10*
Mixed borings, turnings	10.00-11
Short shovel turnings	*10.00-11*

Cast Iron Grades

No. 1 cupola	39.00-40
Stove plate	30.00-31
Charging box cast	31.00-32
Heavy breakable	31.00-32
Unstripped motor blocks	19.00-20
Clean auto cast	43.00-44

SEATTLE

No. 1 heavy melting	*35*
No. 2 heavy melting	*33*
No. 1 bundles	29.0
No. 2 bundles	*23*
Machine shop turnings	17.
Mixed borings, turnings	17.
Electric furnace No. 1	38.0

Cast Iron Grades

No. 1 cupola	34
Heavy breakable cast	28.0
Unstripped motor blocks	26
Stove plate (f.o.b. plant)	21.0

LOS ANGELES

No. 1 heavy melting	38.0
No. 2 heavy melting	36.0
No. 1 bundles	35.0
No. 2 bundles	17.0
Machine shop turnings	15.0
Shoveling turnings	18.0
Cast iron borings	18.0
Cut structurals and plate 1 ft and under	49.0

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	47.0

Railroad Scrap

No. 1 R.R. heavy melt.	41.0

SAN FRANCISCO

No. 1 heavy melting	36.0
No. 2 heavy melting	33.0
No. 1 bundles	34.0
No. 2 bundles	22.0
Machine shop turnings	16.0
Mixed borings, turnings	16.0
Cast iron borings	16.0
Heavy turnings	16.0
Short shovel turnings	16.0
Cut structurals, 3 ft	42.0

Cast Iron Grades

No. 1 cupola	44.0
Charging box cast	34.0
Stove plate	34.0
Heavy breakable cast	28.0
Unstripped motor blocks	31.0
Clean auto cast	40.0
Drop broken machinery	40.0
No. 1 wheels	34.0

HAMILTON, ONT.

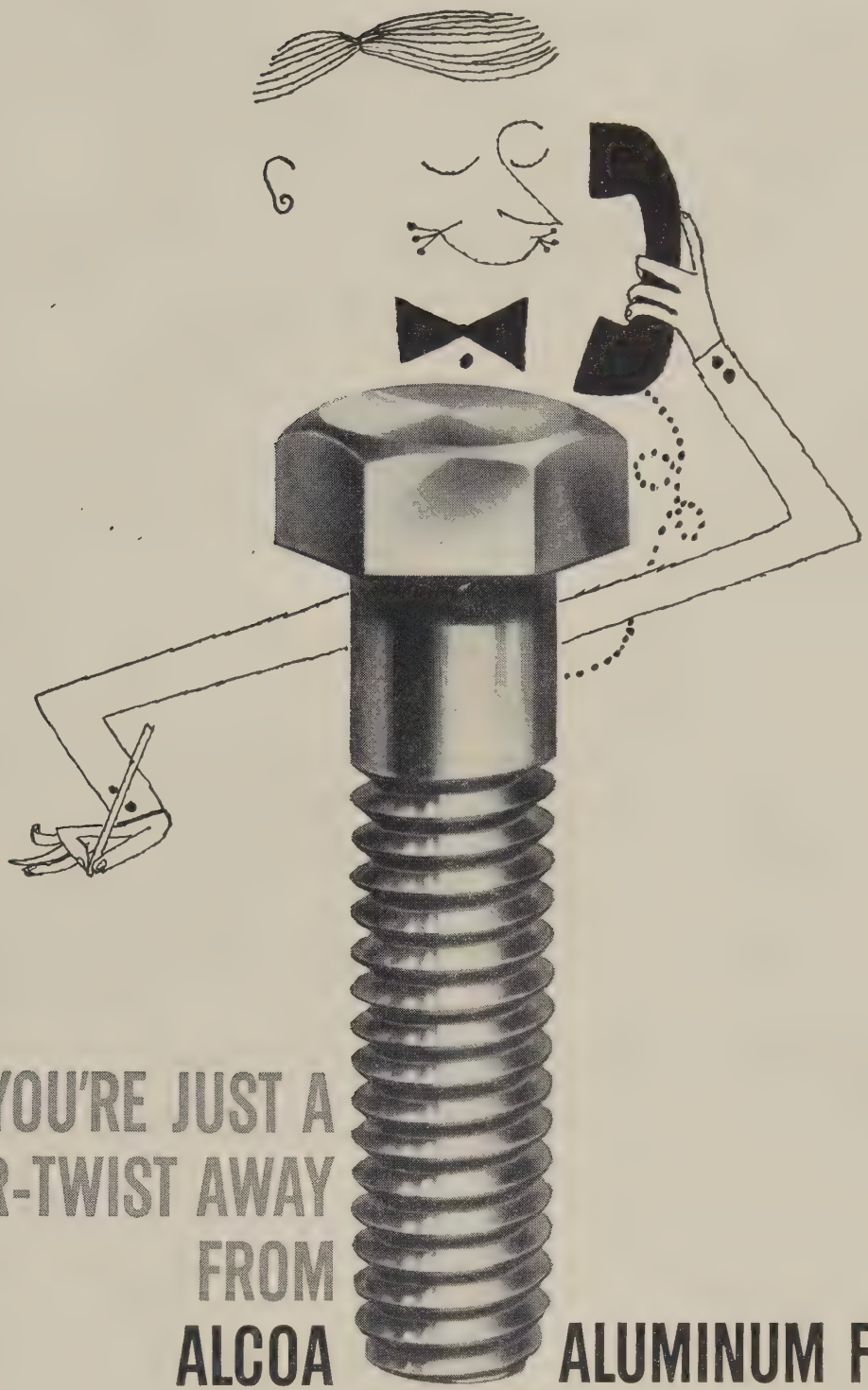
(Brokers' buying prices)

No. 1 heavy melting	32.2
No. 2 heavy melting	28.2
No. 1 bundles	32.2
No. 2 bundles	22.7
Mixed steel scrap	24.2
Mixed borings, turnings	13.0
Busheling, new factory:	
Prepared	32.2
Unprepared	26.2
Short steel turnings	17.0

Cast Iron Grades‡

No. 1 machinery cast	46.50-48.0

†Nominal.
‡F.o.b. Hamilton, Ont.



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So don't worry if stocks run short. Look up your local distributor in the Yellow Pages of your phone book. Call him. He'll give your order *action* at the local level almost before you can hang up! *P.S.:* For additional facts and samples of Alcoa Aluminum Fasteners, just mail the coupon below.

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Stability Seen until Midyear

Expect a time of relative calm through June at least as the market settles down to wait for contract talks. Sales should be steady, prices firm. Earnings for quarter better

Nonferrous Metal Prices, Pages 222 & 223

METALMEN AGREE that you can look for a more stable, less hectic market over the rest of the second quarter. They predict: Fewer price changes, continuation of sales at near present levels with perhaps slightly less hedge buying, more market conservatism as contract negotiations draw near.

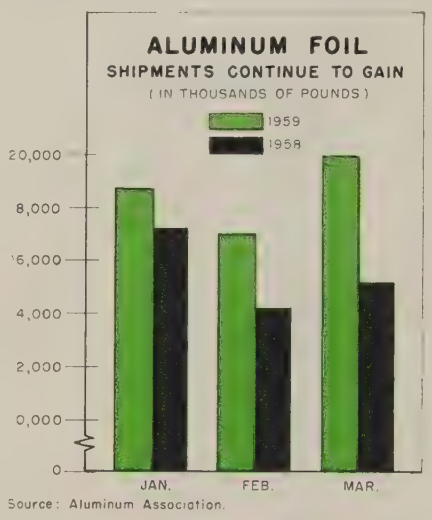
Here's a metal-by-metal rundown on what to expect:

• **Copper**—Primary sales are strong and should remain that way through the quarter. Custom smelter demand is spotty and will probably continue erratic over the next seven weeks. A drying up of demand caused the smelters to lower their price 0.5 cent to 32 cents a pound on Apr. 30. That quotation shouldn't change in the near future. It would take a major market upheaval to bring any change in the primary price.

If the government has any further thoughts about disposing of stockpile copper (see STEEL, Apr. 27, p. 156), it is keeping them quiet. Informed Washington sources say the Office of Civil & Defense Mobilization has quietly canceled its plan although no public announcement will be made to this effect. Reason: It wants to leave the door open to dispose of some of the metal in case of a prolonged strike.

• **Lead-Zinc**—Sales, which are fair, should stay on a plateau for the rest of the quarter. Some observers believe galvanizers will begin to ease up on zinc buying in early June in anticipation of labor difficulties. Everyone would be surprised if the zinc price changed before midyear. Lead, at 11.5 cents a pound, is more vulnerable than zinc, but it looks stable at the moment. You may hear more outcries from Washington for additional remedial help for the industry, but don't look for anything to happen.

Further announcements of production and export curtailments are



Source: Aluminum Association.

probable. There have been several of them lately. The most recent comes from American Zinc, Lead & Smelting Co., which will cut back zinc output (beginning July 1) by 6000 to 7000 tons annually, and from the Belgian producer, Katanga, which will reduce zinc exports by 5000 tons yearly, commencing June 1.

• **Aluminum**—Shipments are running about 40 per cent over last year's and should continue this pace through the first half. A price change is out of the question until after labor talks which begin Aug. 1. Production is currently running at 1,863,250 tons a year and will remain at this level for the next month or so—then probably go up a little as some new production is brought in.

First Quarter Profits Up

If you needed any clear cut documentation that the nonferrous industry bounced back in the first quarter, profit statements now being released will give you all the proof you need. Take a look at these representative examples:

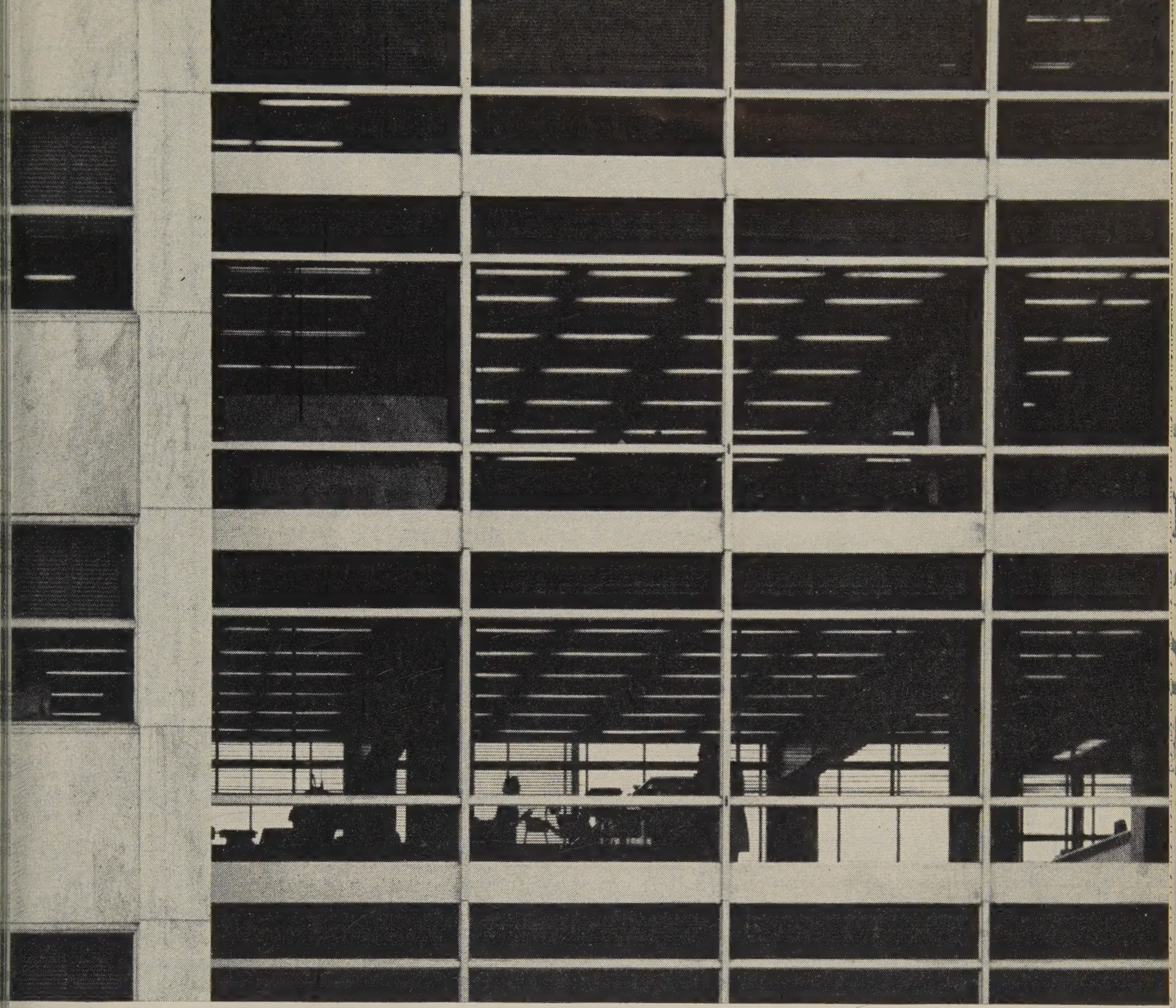
	1st Qtr 1959	1st Qtr 1958
COPPER		
Kennecott	$22,396,392	$11,651,59
Anaconda	16,250,000	6,130,89
Phelps Dodge	13,000,000	6,800,00
LEAD-ZINC		
St. Joseph	2,060,972	2,424,29
American ZL&S	361,719	165,83
ALUMINUM		
Alcoa	10,725,430	11,458,81
Reynolds	9,001,357	9,910,34
Kaiser	3,476,000	6,419,00
MILLS		
Revere	2,491,375	1,211,56
Bridgeport	2,154,000	565,00
Calumet	1,360,135	396,00

Aluminum is the one nonferrous industry where profits took an across-the-board dip. More aluminum was sold than in the first quarter of 1958 but producers got less revenue per pound due to the price drop that occurred on Apr. 1, 1958. Also contributing to lower earnings was some price weakness in fabricated products and higher labor costs.

NONFERROUS PRICE RECORD

	Price May 6	Last Change	Previous Price	Apr. Avg	Mar. Avg	May, 1958 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	24.000
Copper	31.50–32.00	Apr. 30, 1959	31.50–32.50	32.404	32.031	24.433
Lead	11.30	Apr. 20, 1959	10.80	10.992	11.238	11.512
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	102.50	May 6, 1959	102.75	102.490	103.000	94.510
Zinc	11.00	Feb. 25, 1959	11.50	11.000	11.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig 99.8%, Velasco, Tex.



THE ONES THAT WILL LAST (and last, and last!)? THOSE MADE OF WEIRKOTE® ZINC-COATED STEEL!

Laboratory salt-spray tests prove it. Leading manufacturers prove it. Experience proves it. Primary window frames and storm and screen frames of Weirkote zinc-coated steel last and last and last—literally shrug off the elements!

Weirkote will not give in to corrosion invasion because its zinc coat clings tightly to its steel surface year after year. Reason? Zinc and steel are actually integrated by Weirkote's continuous process.

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WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.20 per lb deld.

Cobalt: 97.99%, $1.75 per lb for 500-lb keg, $177 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 31.50 deld.; custom smelters, 32.00; lake, 31.50 deld.; fire refined, 31.25 deld.

Germanium: First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 35.00-37.00 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 nom. per troy oz.

Lead: Common, 11.30; chemical, 11.40; corroding, 11.40, St. Louis, New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 100 lb, $11 per lb; 100-500 lb, $9.50 per lb; 500 lb or more, $9 per lb. All prices deld.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $245-249 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $18-20 per troy oz.

Platinum: $77-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $2.00-2.20 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 102.50.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 14.00; No. 5, 13.75 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass No. 115, 30.25; tin bronze, No. 225, 41.25; No. 245, 35.00; high-leaded tin bronze, No. 305, 34.50; No. 1 yellow, No. 405, 24.75; manganese bronze, No. 421, 27.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.91, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.89, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 36.855; l.c.l., 37.48. Weatherproof, 20,000-lb lots, 37.42; l.c.l., 38.17.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.50-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	84.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-75.30	90.60-91.30
36-38	66.10-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 24.50-25.00; No. 2 heavy copper and wire, 22.50-23.00; light copper, 20.50-21.00; No. 1 composition red brass, 19.00-19.50; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheets, Strip, Plate	Rod	Wire	Seamless Tubes
Copper	55.63b	52.86c	....	55.82
Yellow Brass	48.24	32.73d	48.78	51.65
Low Brass, 80%	51.23	51.17	51.77	54.54
Red Brass, 85%	52.29	52.23	52.83	55.60
Com. Bronze, 90%	53.90	53.84	54.44	56.96
Manganese Bronze	56.54	50.14	60.62	....
Muntz Metal	50.85	46.16	....	....
Naval Brass	52.80	46.61	59.36	56.21
Silicon Bronze	60.67	59.86	60.21	78.35
Nickel Silver, 10%	63.82	66.15	66.15	....
Phos. Bronze	75.34	75.84	75.84	77.02

SCRAP ALLOWANCES e (Based on copper at 31.50c)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	27.500	27.500	26.750
Yellow Brass	20.625	19.750	18.750
Low Brass, 80%	23.250	23.000	22.500
Red Brass, 85%	24.250	24.000	23.500
Com. Bronze, 90%	25.125	24.875	24.375
Manganese Bronze	19.125	18.875	18.375
Muntz Metal	19.375	19.125	18.625
Naval Brass	19.125	18.875	18.375
Silicon Bronze	27.000	26.750	26.000
Nickel Silver, 10%	25.500	25.250	12.625
Phos. Bronze	28.625	28.375	25.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

osition turnings, 18.00-18.50; new brass clippings, 17.50-18.00; light brass, 13.00-13.50; heavy yellow brass, 14.00-14.50; new brass rod ends, 15.00-15.50; auto radiators, unsweated, 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe, 15.50-16.00.

Lead: Soft scrap lead, 7.25-7.50; battery plates, 2.00-2.25; linotype and stereotype, 8.75-9.25; electrotype, 7.25-7.75; mixed babbitt, 9.50-10.00.

Monel: Clippings, 26.00-28.00; old sheets, 23.00-25.00; turnings, 20.00-21.00; rods, 26.00-28.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 38.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.25-3.50; new diecast scrap, 3.00-3.25; old diecast scrap, 1.75-2.00.

Aluminum: Old castings and sheets, 9.75-10.25; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.75-12.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.75-17.25; segregated high copper clips, 15.75-16.25; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.25-15.75.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.50-15.00; segregated high copper clips, 13.00-13.50; mixed low copper clips, 13.50-14.00; mixed high copper clips, 12.50-13.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 57.50; light scrap, 52.50; turnings and borings, 37.50.

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.75; light copper, 23.50; refinery brass (60% copper) per dry copper content, 25.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.75; light copper, 23.50; No. 1 composition borings, 20.50; No. 1 composition solids, 21.00; heavy yellow brass solids, 15.00; yellow brass turnings, 14.00; radiators, 16.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.20.

Copper: Flat-rolled, 47.79; oval, 46.00, 5000-10,000 lb; electrodeposited, 40.50, 2000-5000 lb lots; cast, 43.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; wire, 27.00; No. 2 heavy copper and wire, 26.00; light copper, 23.75; refinery brass deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 121.50; 200-499 lb, 120.00; 500-999 lb, 119.50; 1000 lb or more, 119.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.30 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 15.30; 2000-5900 lb, 13.30; 6000-11,900 lb, 13.05; 12,000-22,900 lb, 12.80; 23,000 lb or more, 12.30.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 80.10; 100-600 lb, 70.70; 700-1900 lb, 68.00; 2000-9900 lb, 66.10; 10,000 lb or more, 64.80.

Stannous Chloride (Anhydrous): 25 lb, 155.60; 100 lb, 150.70; 400 lb, 148.30; 800-19,900 lb, 107.40; 20,000 lb or more, 101.30.

Stannous Sulphate: Less than 50 lb, 140.70; 50 lb, 110.70; 100-1900 lb, 108.70; 2000 lb or more, 106.70.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 217*)

• **Houston**—The scrap market is listless despite the fact that prices, pegged to a May 15-June 15 mill order, are comparatively high. With the leading mill emphasizing that it likely will buy no more scrap before June 15, brokers are moving slowly in filling their commitments.

• **Seattle**—The principal buyer of scrap in Oregon reportedly has withdrawn temporarily from the market after a period of moderate activity. Combined with lack of new export business, the withdrawal may herald a price change. Current export commitments have been filled.

• **LosAngeles** — Demand for steelmaking scrap remains steady. Mills are buying only for immediate needs; their inventories are high.

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We are interested in purchasing
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Sheet, strip, bars, tubing and pipe
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Help Wanted

MECHANICAL ENGINEER
Large manufacturer (approximately 2500 employees) of specialty steel products including closed and open die heavy press forgings, forged and rolled rings and flanges, desires graduate mechanical engineer with 5 to 10 years' experience in tool, die, jig, and fixture design to head this engineering function. Salary commensurate with ability. When applying give educational background, experience and salary requirements. Reply Box 758, STEEL, Penton Bldg., Cleveland 13, Ohio.

EXPERIENCED SHEET PRODUCTION SUPERINTENDENT. Immediate opening for superintendent with background in aluminum strip and sheet rolling. Prefer Mechanical Engineering Degree, or equivalent, with 3-4 years experience. Must have working knowledge of plant layout and auxiliary equipment. Modern installation in growing Mid-southern community. Independent aluminum production. In resume give age, family, references, experience and salary requirement. Enclose photograph. Reply Box 753, STEEL, Penton Bldg., Cleveland 13, Ohio.

Reinforcing steel yard foreman trainee; knowledge of blue print estimating and detailing; age 24-39; write to Rinker Materials Corp., P. O. Box 231, W. Palm Beach, Fla.

Analytical chemist for stainless steel foundry. Must be a graduate with ability to qualify for chief chemist. Equipment includes spectroscope. **Write Box 763, STEEL, Penton Bldg., Cleveland 13, Ohio.**

Representatives Wanted

WANTED: MANUFACTURERS' AGENT for New England territory to represent light hammer closed die forge plant. Please send particulars and lines now represented. Box 760, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

Young Man Desires Position as SALES TRAINEE, Experienced in Tool and Die, Drop Forging, Heat Treating, Machining, and Aircraft. Have worked in Engineering and Administrative Phases. Reply Box 761, STEEL, Penton Bldg., Cleveland 13, Ohio.

INDUSTRIAL ENGINEER—9 years basic metals experience in sheet, strip, rod, tube fabrication including casting, scrap room, and forging operations; thorough knowledge of methods, time-study, incentives, cost analysis. Desires responsibility and opportunity with progressive company. Analytical ability; supervisory experience. Age 32. College degree. Reply Box 762, STEEL, Penton Bldg., Cleveland 13, Ohio.

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BUILDINGS FOR SALE

Total of 3-Widths of 58', 78', and 31', length of 600'.2—with crane runways, 1—Capable of handling 80 Ton Crane. Located on siding; ready for dismantling; ideal for heavy industry.

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Penton Bldg., Cleveland 13, Ohio

I am looking for a manufacturing company interested in purchasing a newly invented machine for the production of spiral-welded metal pipes of different lengths, diameters, and strength at reduced cost.

Please contact Mathias Dupont, 2 rue du moulin Moyeuvre-Grand, Moselle, France.

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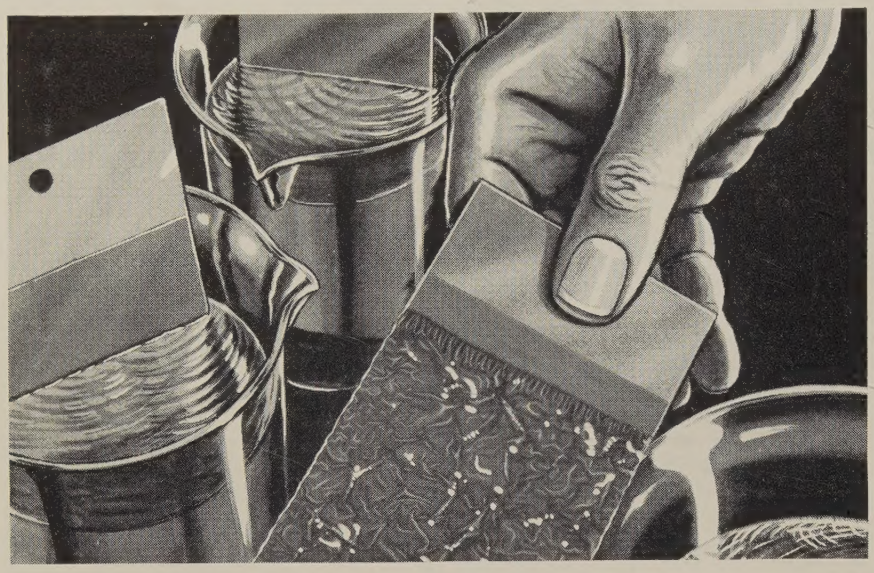

Even tough EPOXY FINISHES peel off in Oakite STRIPPER S-A

Burn off an epoxy finish from a reject as a last resort? Not at all necessary. Oakite STRIPPER S-A strips metals clean. That's true for multiple coats as well as single coat epoxy finishes. Look at STRIPPER S-A's record:

- *A 3/16" thick coating built up from layers of epoxy coating and wrappings of fiber glass was stripped from gun barrels by overnight soak in Stripper S-A. Everything tried previously had failed.*
- *Brass plated steel parts were stripped of their epoxy finish in matter of minutes.*
- *Workholding spindles and racks laden with at least 10 coats were stripped to bare metal by a short soak. Paint hooks formerly burned clean are now soaked clean instead.*

This powerful stripper is safe for all metals except zinc and magnesium. And it's safe to the user, since it works cold . . . has no flash point . . . rinses with water.

STRIPPER S-A is but one of a long list of superior strippers by Oakite. Some are specially formulated for use on steel . . . aluminum . . . other metals. Some for removing lacquers . . . tough synthetic finishes. Still others are designed especially for removing paint from vertical surfaces. Whatever your paint-stripping problem—Oakite is bound to have the answer. Ask your local Oakite man or send for paint-stripping bulletin F-7893. Oakite Products, Inc., 34E Rector Street, New York 6, N. Y.

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